MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

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Sincerely I. W. Fasson

TRANSACTIONS

OF THE

MEDICAL SOCIETY

OF THE

STATE OF NORTH CAROLINA

SIXTY-FIFTH ANNUAL MEETING

HELD AT

PINEHURST, NORTH CAROLINA

APRIL 16, 17, 18, 1918

President, DR. ISAAC W. FAISON, Charlotte, N. C.
Secretary, DR. BENJ. K. HAYS, Oxford, N. C.
Reporter, JOSEPHINE P. TONNOFFSKI, Raleigh, N. C.

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"It is understood that the Society is not to be considered as endorsing all the views and opinions of authors of papers published in the Transactions of the Society."—*Extract from By-Laws, chapter 10, section 8.*

CONTENTS

See Index, p. 437 et seq.

Isaac W. Faison, M.D. ---------- Frontispiece
Committee on Publication ---------- ii
Early History of the North Carolina Medical Society From Organization to 1804 ---------- vi
Roster of Officers of the Medical Society of the State of North Carolina from 1849 to 1918 ---------- vii
Past Members Board of Medical Examiners of the State of North Carolina ---------- x
Board of Medical Examiners, 1914-1920 ---------- x
Roster of Members North Carolina State Board of Health from Organization in 1877 to 1918 ---------- xi
Status of Society Membership by Counties for Years 1906-1918 ---------- xiii
Honorary Fellows Medical Society of the State of North Carolina ---------- xv
Honorary Members Medical Society of the State of North Carolina ---------- xvii
Officers 1917-1918 ---------- xvii
Officers for 1918-1919 ---------- xvii
Councillors 1916-1919 ---------- xvii
Chairmen of Sections ---------- xviii
Program Sixty-fifth Annual Meeting ---------- xix

PAGE

Foreword—*Dr. L. B. McBrayer* ---------- 1
Minutes of State Medical Society ---------- 3
Transactions of the State Medical Society ---------- 7
Opening Exercises ---------- 7
"Mine Host"—*Mr. Leonard Tufts* ---------- 7
Address of Welcome—*Dr. A. McNiel Blair* ---------- 9
Welcome on Behalf of the Sandhill Section—*Hon. Robert N. Page* ---------- 11
Response to Addresses of Welcome—*Dr. F. R. Harris* ---------- 14
Invocation—*Dr. Frederick Mack Gardner* ---------- 16
Annual Address of President—*Dr. I. W. Faison* ---------- 17
Announcements of the Chairman of the Committee of Arrangements ---------- 24
Scientific Papers and Discussions ---------- 27
Diseases that Can with Assurance be Referred to Absence of, or Derangement of Function of, the Ductless Glands—*Dr. Aldert Smedes Root* ---------- 29
Sudden Death in Infancy—*Dr. L. W. Elias* ---------- 35
Congenital Syphilis—*Dr. J. Buren Sidbury* ---------- 40
Appendicitis in Children—*Dr. J. F. Highsmith* ---------- 58
The Existence of Tropical Sprue in North Carolina—*Dr. Edward J. Wood* 63
Malaria Fever: The Effects of its Toxins upon the Kidneys—*Dr. C. F. Strosnider* ---------- 70
Amebic Dysentery—*Dr. A. J. Warren* ---------- 76
The Incidence and the Importance of Pleurisy in Early Tuberculosis—*Dr. P. P. McCain* ---------- 80
The Clinical Relation of Systolic and Diastolic Blood Pressure in the Diagnosis of Certain Acute Circulatory Conditions—*Dr. Harold H. Newman* ---------- 84

PAGE

Present Medical Conditions in North Carolina—*Dr. H. D. Stewart* 91
Some Phases of Medicine in the Past, Present and Future—*Dr. F. E. Asbury* 100
Angioneurotic Edema, a Cause of Hydrothorax—*Dr. Ben. H. Hackney* 104
The Value of the X-Ray in Diagnosing Gastro-Intestinal Disorders—*Dr. Robert H. Lafferty* 106
The Preventive Treatment of Pellagra—*Dr. Joseph Goldberger* 109
Protecting Physicians in the Administration of Public Health Laws—*Dr. A. M. Crouch* 116
What Public Health Owes the Infant—*Dr. L. W. Elias* 119
What I Have Been Instrumental in Accomplishing in Eight Months as a Whole-time Health Officer—*Dr. F. M. Register* 124
Kidney With Inferior Renal Artery, Complete Ossification of Stylo-Hyoid Ligament, Thoracic and Abdominal Transposition—*Dr. G. Alfred Aiken* 126
Some of the More Important Bone Diseases as Demonstrated by the X-Ray—*Dr. R. L. Pittman* 130
The Development of Pathology as a Science—*Dr. T. W. West* 133
Carrel-Dakin Solution and Paraffin Dressings in Certain Conditions—*Dr. L. W. Kornegay* 137
Diagnosis of Ureteral Calculi and Technique of Removal Without Operation—*Dr. A. J. Crowell* 141
Improvements in Suprapubic Prostatectomy—*Dr. E. T. Dickinson* 144
Typhlitis Appendicitis, With Report of Some Interesting Cases—*Dr. J. W. Wallace* 147
Subtotal Hysterectomy: Indications and Technique—*Dr. L. S. Booker* 156
Blood Transfusion—*Dr. L. A. Crowell* 158
Significance of the Sigmoid Adhesion, The—*Dr. Hubert A. Royster* 162
On the Surgical Aspects of Toxic Goiter—*Dr. N. D. Bitting* 167
Report of an Interesting Case of Exophthalmic Goiter—*Dr. Foy Roberson* 170
Secondary Operations in the Abdomen—*Dr. George William Pressley* 172
Recent Advances in the Field of Neurological Surgery, and Especially the Diagnosis and Treatment of Brain Injuries—*Dr. William Sharpe* 175
Traumatic Brain Surgery—*Major John Wesley Long* 190
War Surgery—*Col. W. O. Owen* 205
Bilateral Pyelitis—Report of a Case—*Dr. Robert L. Felts* 210
Frequency of Retroflexion of the Uterus Following Labor; Its Causation, Prevention, Treatment, The—*Dr. John G. Blount* 212
Mid-wife Problem, The—*Dr. G. H. Macon* 216
Anesthetics in Obstetrics—*Dr. Otho B. Ross* 221
Vaccines and Antitoxins—*Dr. Harold H. Newman* 227
Use of Solidified Carbon Dioxide in the Removal of Benign and Malignant Growth on the Skin—*Dr. G. H. Sadelson* 231
The Therapeutic Value of Rest in the Management of Tuberculosis Patients—*Dr. W. H. Sherrill* 235
Institutional and After Care of Drug Addicts, The—*Dr. W. C. Ashworth* 239
Esophageal Stricture—*Dr. J. B. Wright* 245
Adenoids in Children: A Review of the Lymphatic Circulation of the Pharyngeal Region—*Dr. C. N. Peeler* 250

PAGE

Cataract Accidents—*Dr. J. G. Johnston* 254
The Diagnosis of Acute Mastoiditis—*Dr. H. M. Bonner* 257
Special War Session 261
Presentation of Service Flag—*Dr. L. B. McBrayer* 262
North Carolina Doctors With the Colors 267
Doctors Who Served on the Mexican Border 273
State Committee of National Defense 273
Executive Committee of the Volunteer Medical Service Corps for North Carolina 275
The Owen Bill Explained—*Col. W. O. Owen* 277
Resolutions Adopted by the North Carolina State Medical Society for an Optional Selective Draft of the North Carolina Medical Profession 281
Volunteer Medical Reserve Corps—*Dr. Cyrus Thompson* 283
Relation of the Medical Profession to the Army—*Dr. Robert E. Noble* 289
Control of Venereal Diseases in Extra Cantonment Areas—*Dr. R. W. Brown* 298
The Medical Side of a Military Base Hospital—*Dr. Thomas McCrae* 305
The Treatment of Infection and Infected Wounds With the Chrlorine Antiseptics—*Captain Walter E. Lee* 311
Proceedings of the House of Delegates 317
Report of Hospital Association 322
Report of Examining Board Committee 323
Report of Auditing Committee 324
Report of the Councillor of Seventh District 332
Report of Committee on Nominations 333
Miscellaneous Matters 334
Introduction of Officers 336
Conjoint Session of the State Board of Health and the State Medical Society 338
Annual Report of the Secretary of the State Board of Health 338
Resolution Introduced by Dr. Cyrus Thompson 353
Memorial Exercises 354
Report of Board of Examiners of the State of North Carolina 380
Alphabetical List of Members of Medical Society With Postoffice Addresses 386
List of Members of Component County Societies 397

EARLY HISTORY OF THE NORTH CAROLINA MEDICAL SOCIETY FROM ORGANIZATION TO 1804

Date	Place	President	Vice Peesident	Corresponding Secretary	Secretary	Recording Secretary	Treasurer	Censors
Dec. 24, 1799, or April 16, 1800	Raleigh	Richard Fenner	Nathaniel Loomis, John Claiborne	Calvin Jones		Wm. B. Hill	Cargill Massenburg	Sterling Wheaton, James Webb, Jas. John Pasteur, Jason Hand
Dec. 1, 1800	Raleigh	Richard Fenner			Sterling Wheaton			
Dec. 1, 1801	Raleigh	John C. Osborne	Thomas Mitchel, Richard Fenner	Calvin Jones	Sterling Wheaton		Cargill Massenburg	James Webb, John Sibley
1802	Raleigh	John C. Osborne		Calvin Jones				
1803	Raleigh	John C. Osborne		Calvin Jones				
1804	Raleigh	John C. Osborne		Calvin Jones				

ROSTER OF OFFICERS OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA FROM 1849 TO 1918

*Missing Data Not to be Found in Record

	Date	Place	Members in Attendance	President	Vice Presidents	Secretary	Treasurer	Members on Roll*	Honorary Members*	Honorary Fellows*
	1849	Raleigh	25	F. J. Hill	.....	W. H. McKee	.....	25	....	....
1	1850	Raleigh	21	E. Strudwick	F. J. Haywood, C. E. Johnson, J. W. Williamson, W. G. Thomas.	W. H. McKee	W. G. Hill	38	9	....
2	1851	Raleigh	23	E. Strudwick	C. E. Johnson	W. H. McKee	W. G. Hill	46	9	....
3	1852	Wilmington	38	J. E. Williamson	Thomas N. Cameron, William G. Hill, Johnston B. Jones, N. J. Pittman.	E. B. Haywood	J. J. W. Tucker	72	12	....
4	1853	Fayetteville	24	J. E. Williamson	William G. Hill, Johnston B. Jones, J. B. G. Myers, N. J. Pittman.	W. W. Harris	Daniel Dupree	80	14	....
5	1854	Raleigh	37	J. H. Dickson	N. J. Pittman, J. B. G. Myers, J. Graham Tull, A. D. McLean.	S. S. Satchwell	Daniel Dupree	84	17	....
6	1855	Salisbury	23	J. H. Dickson	J. Graham Tull, Owen Hadley, A. D. McLean, Hugh Kelly.	S. S. Satchwell	J. B. Dunn	96	18	....
7	1856	Raleigh	35	C. E. Johnson	Marcellus Whitehead, E. R. Gibson, Johnston B. Jones, O. F. Manson.	S. S. Satchwell	J. B. Dunn	101	22	....
8	1857	Edenton	25	C. E. Johnson	Marcellus Whitehead, O. F. Manson, H. W. Faison, E. T. Gibson.	W. G. Thomas	J. B. Dunn	113	16	....
9	1858	New Bern	69	W. H. McKee	Edward Warren, C. W. Graham, Caleb Winslow, A. B. Pierce.	W. G. Thomas	J. B. Dunn	172	18	....
10	1859	Statesville	81	W. H. McKee	James G. Ramsey, P. E. Hines, J. R. Mercer, W. T. Howard.	W. G. Thomas	C. W. Graham	....	....	....
11	1860	Washington	64	N. J. Pittman	P. T. Henry, R. H. Winborne, M. Whitehead, T. S. Leach.	W. G. Thomas	C. W. Graham	233	18	....
12	1861	Morganton	23	N. J. Pittman	J. J. Summerell, C. T. Murphy, G. W. Hodges, W. A. B. Norcom.	W. G. Thomas	C. W. Graham	244	18	....
13	1866	Raleigh	20	J. J. Summerell	.....	W. G. Thomas	C. W. Graham	....	....	....
14	1867	Tarboro	41	W. G. Thomas	E. Burke Haywood, R. H. Winborne, W. L. Barrow, J. W. Jones.	S. S. Satchwell	C. W. Graham	288	11	....
15	1868	Warrenton	27	S. S. Satchwell	Hugh Kelly, George A. Foote, Charles J. O'Hagan, J. H. Baker.	Thomas F. Wood	J. W. Jones	....	....	....
16	1869	Salisbury	36	E. B. Haywood	Thomas E. Wilson, A. B. Pierce, C. T. Murphy, M. A. Locke.	Thomas F. Wood	J. W. Jones	....	....	....
17	1870	Wilmington	38	C. J. O'Hagan	E. A. Anderson, F. N. Lucky, W. R. Sharpe, R. L. Payne.	Thomas F. Wood	J. W. Jones	....	....	....
18	1871	Raleigh	35	Hugh Kelly	D. N. Patterson, R. C. Pearson, J. B. Seaby, G. L. Kirby.	Thomas F. Wood	J. W. Jones	....	....	....
19	1872	New Bern	34	W. G. Hill	H. W. Faison, R. I. Hicks, G. H. Macon, W. A. B. Norcom.	James McKee	J. W. Jones	....	....	....

ROSTER OF OFFICERS OF THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA FROM 1849 TO 1918

*Missing Data Not to be Found in Record

	Date	Place	Members in Attendance	President	Vice Presidents	Secretary	Treasurer	Members on Roll*	Honorary Members*	Honorary Fellows*
20	1873	Statesville	43	M. Whitehead	W. T. Ennett, William Little, Charles Duffy, T. P. Jerman.	James McKee	H. T. Bahnson	....	....	....
21	1874	Charlotte	56	W. A. B. Norcom	J. B. Jones, R. F. Lewis, C. G. Cox, J. L. Knight.	James McKee	H. T. Bahnson	....	....	....
22	1875	Wilson	60	J. W. Jones	Walter Debnam, J. A. Gibson, William Little, D. N. Patterson.	James McKee	H. T. Bahnson	148	5	....
23	1876	Fayetteville	33	Peter E. Hines	J. H. Baker, G. G. Smith, T. D. Haigh, J. K. Hall.	James McKee	H. T. Bahnson	157	4	....
24	1877	Salem	42	Geo. A. Foote	J. K. Hall, B. W. Robinson, A. Holmes, A. A. Hill.	James McKee	A. G. Carr	177	4	....
25	1878	Goldsboro	79	R. L. Payne	E. M. Rountree, Richard Anderson, S. B. Flowers, L. A. Smith.	L. J. Picot	A. G. Carr	194	6	....
26	1879	Greensboro	109	Chas. Duffy, Jr.	J. A. Gibson, Willis Alston, James McKee, A. A. Hill.	L. J. Picot	A. G. Carr	198	6	....
27	1880	Wilmington	105	J. F. Shaffner	J. K. Hall, W. C. McDuffie, W. R. Wilson, R. F. Lewis.	L. J. Picot	A. G. Carr	225	6	....
28	1881	Asheville	92	R. B. Haywood	J. E. McRee, W. H. Lilly, R. H. Speight, W. J. H. Bellamy.	L. J. Picot	A. G. Carr	254	6	....
29	1882	Concord	65	Thos. F. Wood	T. J. Moore, D. J. Cain, S. E. Evans, John McDonald.	L. J. Picot	A. G. Carr	297	7	....
30	1883	Tarboro	112	J. K. Hall	A. W. Knox, J. M. Hadley, E. S. Foster, John Whitehead.	L. J. Picot	A. G. Carr	310	7	....
31	1884	Raleigh	112	A. B. Pierce	F. W. Potter, G. W. Graham, R. Dillard, G. W. Long.	L. J. Picot	A. G. Carr	348	7	....
32	1885	Durham	173	W. C. McDuffie	James McKee, T. E. Anderson, W. H. Whitehead, A. G. Carr.	W. C. Murphy	R. L. Payne, Jr.	424	6	....
33	1886	New Bern	113	Joseph Graham	H. T. Bahnson, L. J. Picot, J. L. McMillan, W. W. Faison.	J. M. Baker	R. L. Payne, Jr.	438	7	....
34	1887	Charlotte	112	H. T. Bahnson	G. G. Smith, J. L. Nicholson, C. M. Poole, H. B. Ferguson.	J. M. Baker	R. L. Payne, Jr.	452	7	....
35	1888	Fayetteville	133	T. D. Haigh	W. T. Ennett, J. A. Dunn, T. E. Anderson	J. M. Baker	C. M. Poole	306	6	....
36	1889	Elizabeth City	50	W. T. Ennett	W. J. Jones, S. W. Stevenson, G. W. Long	J. M. Baker	C. M. Poole	410	6	....
37	1890	Oxford	160	G. G. Thomas	R. L. Payne, Jr., Richard Dillard, S. D. Booth.	J. M. Hays	C. M. Poole	414	6	....
38	1891	Asheville	135	R. H. Lewis	S. W. Battle, J. L. Nicholson, W. H. Lilly	J. M. Hays	C. M. Poole	422	6	....
39	1892	Wilmington	162	W. T. Cheatham	T. S. Burbank, J. W. Long, W. H. H. Cobb, W. D. Hilliard.	J. M. Hays	C. M. Poole	431	6	....
40	1893	Raleigh	221	J. W. McNeill	W. C. Galloway, H. H. Harris, J. M. Hadley, Thomas Hill.	R. D. Jewett	M. P. Perry	447	5	3

41	1894	Greensboro ..	166	W. H. H. Cobb...	J. A. Hodge, R. W. Tate, Willis Alston, M. H. Fletcher.	R. D. Jewett.....	M. P. Perry...	454	5	3
42	1895	Goldsboro ...	....	J. H. Tucker.....	J. Howell Way, W. H. Harrell, O. McMullan, C. A. Misenheimer.	R. D. Jewett.....	M. P. Perry...	436	7	3
43	1896	Winst'n-S'l'm	158	R. L. Payne.....	S. D. Booth, J. P. Munroe, J. A. Burroughs, J. E. Grimsley.	R. D. Jewett.....	M. P. Perry...	452	7	3
44	1897	Moreh'd City	103	P. L. Murphy....	J. C. Walton, A. A. Kent, M. R. Adams, B. L. Long.	R. D. Jewett.....	M. P. Perry...	406	6	3
45	1898	Charlotte ...	....	Francis Duffy....	E. C. Register, A. T. Cotton, J. B. H. Knight, F. H. Russell.	R. D. Jewett.....	M. P. Perry...	437	6	21
46	1899	Asheville ...	152	L. J. Picot.....	I. W. Faison, J. W. White, H. H. Dodson, W. C. Brownson.	Geo. W. Pressley..	G. T. Sikes....	489	6	16
47	1900	Tarboro	115	Geo. W. Long....	C. M. Poole, James M. Parrott, T. B. Williams, W. D. Hilliard.	Geo. W. Pressley..	G. T. Sikes....	482	6	21
48	1901	Durham	186	Julian M. Baker..	M. H. Fletcher, C. A. Julian, D. A. Stanton, E. M. Summerell.	Geo. W. Pressley..	G. T. Sikes....	515	5	18
49	1902	Wilmington .	147	Robt. S. Young...	A. G. Carr, E. D. Dixon-Carroll, I. M. Taylor, J. M. Parrott.	Geo. W. Pressley..	G. T. Sikes....	546	5	20
50	1903	Hot Springs..	155	A. W. Knox.....	E. G. Moore, C. A. Julian, W. W. McKenzie, J. L. Nicholson.	J. Howell Way...	G. T. Sikes....	530	6	19
51	1904	Raleigh	326	H. B. Weaver....	John Hey Williams, John C. Rodman, S. F. Pfohl.	J. Howell Way...	G. T. Sikes....	1,033	8	17
52	1905	Greensboro ..	361	David T. Tayloe..	C. A. Julian, John T. Burrus, I. W. Faison.	J. Howell Way...	G. T. Sikes....	1,175	8	17
53	1906	Charlotte ...	406	Ed. C. Register...	L. B. McBrayer, W. H. Cobb, W. O. Spencer.	J. Howell Way...	G. T. Sikes....	1,234	8	16
54	1907	Moreh'd City	217	Samuel D. Booth..	C. M. Strong, J. E. McLoughlin, W. F. Hargrave.	David A. Stanton.	H. McK. Tucker	888	7	16
55	1908	Winst'n-S'l'm	372	J. Howell Way...	J. E. Stokes, J. A. Turner, W. H. Dixon	David A. Stanton.	H. McK. Tucker	998	7	28
56	1909	Asheville ...	337	J. F. Highsmith..	C. M. Poole, D. A. Garrison, D. O. Dees..	David A. Stanton.	H. McK. Tucker	1,067	7	25
57	1910	Wri'tsv'e B'ch	276	E. J. Wood.... / J. A. Burroughs*	John Q. Myers, L. D. Wharton.....	David A. Stanton.	H. D. Walker..	1,080	8	35
58	1911	Charlotte ...	412	C. M. VanPoole...	J. V. McGougan, W. E. Warren, L. N. Glenn.	David A. Stanton.	H. D. Walker..	880	8	15
59	1912	Hend'rs'nville	296	A. A. Kent.....	J. P. Munroe, W. P. Horton, J. G. Murphy.	David A. Stanton.	H. D. Walker..	950	8	44
60	1913	Moreh'd City	232	J. P. Munroe.....	F. R. Harris, E. S. Bulluck, L. B. Morse	John A. Ferrell...	H. D. Walker..	1,128	8	47
61	1914	Raleigh	431	J. M. Parrott.....	E. T. Dickinson, J. T. J. Battle, D. E. Sevier.	John A. Ferrell...	H. D. Walker..	1,228	8	47
62	1915	Greensboro ..	443	L. B. McBrayer...	J. J. Philips, C. W. Moseley, S. M. Crowell.	John A. Ferrell...	H. D. Walker..	1,221	9	68
63	1916	Durham	406	M. H. Fletcher...	J. L. Nicholson, L. N. Glenn, W. H. Hardison.	B. K. Hays.....	W. M. Jones....	1,228	10	79
64	1917	Asheville ...	280	Charles O'H. Laughinghouse	D. J. Hill, J. L. Spruill, J. H. Shuford...	B. K. Hays.....	W. M. Jones....	1,271	11	81
65	1918	Pinehurst ...	291	I. W. Faison.....	Wm. deB. MacNider, Jos. B. Greene, Ben. F. Royal.	B. K. Hays.....	W. M. Jones....	.....	....	....

*Died during term of office.

PAST MEMBERS BOARD OF MEDICAL EXAMINERS OF THE STATE OF NORTH CAROLINA

James H. Dickson, President, Wilmington 1859-1866
Charles E. Johnson, Raleigh 1859-1866
Caleb Winslow, Hertford 1859-1866
Otis F. Manson, Townsville 1859-1866
William H. McKee, Raleigh 1859-1866
Christopher Happoldt, Morganton 1859-1866
J. Graham Tull, New Bern 1859-1866
Samuel T. Iredell, Secretary 1859-1866

N. J. Pittman, President, Tarboro 1866-1872
E. Burke Haywood, Raleigh 1866-1872
R. H. Winborne, Edenton 1866-1872
S. S. Satchwell, Rocky Point 1866-1872
J. J. Summerell, Salisbury 1866-1872
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M. Whitehead, Salisbury 1866-1868
J. F. Snaffner, Salem 1866-1872
William Little, Secretary 1866-1872

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W. A. B. Norcom, Edenton 1872-1878
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Joseph Graham, Charlotte 1878-1884
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A. W. Knox, Raleigh 1884-1890
Francis Duffy, New Bern 1884-1890
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George G. Thomas, Wilmington 1890-1894
Robert S. Young, Concord 1890-1894
George W. Long, Graham 1890-1894

W. H. Whitehead, President, Rocky Mount 1890-1896
L. J. Picot, Secretary, Littleton 1890-1896

Julian M. Baker, President, Tarboro 1892-1898
H. B. Weaver, Asheville 1892-1898
T. S. Burbank, Wilmington 1894-1898
J. M. Hayes, Greensboro 1894-1897

D. T. Tayloe, President, Washington 1896-1902
R. H. Whitehead, Chapel Hill 1896-1897
Thomas E. Anderson, Secretary, Statesville 1896-1900
Kemp P. Battle, Jr., Raleigh 1897-1902
J. Howell Way, Secretary, Waynesville 1897-1902
W. H. H. Cobb, Goldsboro 1898-1902
Albert Anderson, Raleigh 1898-1902

E. C. Register, President, Charlotte 1898-1902
Thomas S. McMullan, Hertford 1900-1902
John C. Walton, Richmond, Va. 1900-1902
George W. Pressley, Secretary, Charlotte 1902-1906

A. A. Kent, President, Lenoir 1902-1908
G. T. Sikes, Secretary, Grissom 1906-1908

Charles O'Hagan Laughinghouse, President, Greenville 1902-1908

M. H. Fletcher, President, Asheville 1902-1908
James M. Parrott, Kinston 1902-1908
J. T. J. Battle, Greensboro 1902-1908
Frank H. Russell, Wilmington 1902-1908

John Bynum, President, Winston-Salem 1908-1914
John C. Rodman, Washington 1908-1914
Benjamin K. Hays, Secretary 1908-1914
Lewis B. McBrayer, Asheville 1908-1914
William W. McKenzie, Salisbury 1908-1914
Henry H. Dodson, Greensboro 1908-1914
J. L. Nicholson, Richlands 1908-1914

BOARD OF MEDICAL EXAMINERS, 1914-1920

J. F. Highsmith, President, Fayetteville, Anatomy, Histology, and Embryology.
H. A. Royster, Secretary, Raleigh, Surgery.
E. G. Moore, Elm City, Obstetrics, Gynecology, and Pediatrics.
J. G. Blount, Washington, Practice of Medicine.
J. Q. Myers, Charlotte, Pharmacology, Materia Medica, and Therapeutics.
I. M. Taylor, Morganton, Chemistry and Hygiene.
M. L. Stevens, Asheville, Physiology, Pathology, Bacteriology.
*Charles T. Harper, Wilmington.

*Died 1915.

ROSTER OF MEMBERS NORTH CAROLINA STATE BOARD OF HEALTH FROM ORGANIZATION IN 1877 TO 1918

Name	Address	Appointed by	Term
S. S. Satchwell, M.D., President	Rocky Point	State Society	1877 to 1878
Thomas F. Wood, M.D., Secretary	Wilmington	State Society	1877 to 1878
Joseph Graham, M.D.	Charlotte	State Society	1877 to 1878
Charles Duffy, Jr., M.D.	New Bern	State Society	1877 to 1878
Peter E. Hines, M.D.	Raleigh	State Society	1877 to 1878
George A. Foote, M.D.	Warrenton	State Society	1877 to 1878
S. S. Satchwell, M.D., President	Rocky Point	State Society	1878 to 1884
Thomas F. Wood, M.D., Secretary	Wilmington	State Society	1878 to 1884
Chas. J. O'Hagan, M.D., President	Greenville	State Society	1878 to 1882
George A. Foote, M.D.	Warrenton	State Society	1878 to 1882
Marcellus Whitehead, M.D.	Salisbury	State Society	1878 to 1880
R. L. Payne, M.D.	Lexington	State Society	1878 to 1880
H. G. Woodfin, M. D.	Franklin	Gov. Z. B. Vance	1878 to 1880
A. R. Ledeux, Chemist	Chapel Hill	Gov. Z. B. Vance	1878 to 1880
William Cain, Civil Engineer	Charlotte	Gov. Z. B. Vance	1878 to 1880
R. L. Payne, M.D.	Lexington	State Society	1881 to 1887
M. Whitehead, M.D., President	Salisbury	State Society	1881 to 1884
J. M. Lyle, M.D.	Franklin	Gov. T. J. Jarvis	1881 to 1883
William Cain, Civil Engineer	Charlotte	Gov. T. J. Jarvis	1881 to 1883
W. G. Simmons, Chemist	Wake Forest	Gov. T. J. Jarvis	1881 to 1883
J. W. Jones, M.D., President	Wake Forest	State Society	1883 to 1889
John McDonald	Washington	State Society	1883 to 1889
S. H. Lyle, M.D.	Franklin	Gov. T. J. Jarvis	1883 to 1885
W. G. Simmons, Chemist	Wake Forest	Gov. T. J. Jarvis	1883 to 1885
Arthur Winslow, Civil Engineer	Raleigh	Gov. T. J. Jarvis	1883 to 1886
R. H. Lewis, M.D.	Raleigh	State Bd. of Health	1884 to 1893
Thomas F. Wood, M.D., Secretary	Wilmington	State Society	1885 to 1887
William D. Hilliard, M.D.	Asheville	State Society	1885 to 1891
Arthur Winslow, Civil Engineer	Raleigh	Gov. A. M. Scales	1885 to 1891
W. G. Simmons, Chemist	Wake Forest	Gov. A. M. Scales	1885 to 1887
J. H. Tucker, M.D.	Henderson	Gov. A. M. Scales	1885 to 1887
R. H. Lewis, M.D., Secretary	Raleigh	State Society	1887 to 1897
H. T. Bahnson, M.D., President	Winston-Salem	State Society	1887 to 1893
Arthur Winslow, Civil Engineer	Raleigh	Gov. A. M. Scales	1887 to 1888
W. G. Simmons, Chemist	Wake Forest	Gov. A. M. Scales	1887 to 1889
J. H. Tucker, M.D.	Henderson	Gov. A. M. Scales	1887 to 1889
J. L. Ludlow, Civil Engineer	Winston	Gov. A. M. Scales	1888 to 1891
J. H. Tucker, M.D.	Henderson	Gov. D. G. Fowle	1889 to 1891
F. P. Venable, Ph.D., Chemist	Chapel Hill	Gov. D. G. Fowle	1889 to 1891
J. L. Ludlow, Civil Engineer	Winston	Gov. D. G. Fowle	1889 to 1893
J. A. Hodges, M.D.	Fayetteville	State Society	1889 to 1892
J. M. Baker, M.D.	Tarboro	State Society	1899 to 1893
J. H. Tucker, M.D.	Henderson	Gov. T. M. Holt	1891 to 1893
F. P. Venable, Ph.D., Chemist	Chapel Hill	Gov. T. M. Holt	1891 to 1893
J. L. Ludlow, Civil Engineer	Winston	Gov. T. M. Holt	1891 to 1892
Thos. F. Wood, M.D., Secretary*	Wilmington	State Society	1891 to 1897
George G. Thomas, M.D., President	Wilmington	State Bd. of Health	1892 to 1897
S. Westray Battle, M.D.	Asheville	State Society	1891 to 1895
W. H. Harrell, M.D.	Williamston	State Society	1892 to 1895
John Whitehead, M.D.	Salisbury	State Bd. of Health	1893 to 1895
W. H. G. Lucas	White Hall	Gov. Elias Carr	1893 to 1895
F. P. Venable, Ph.D., Chemist	Chapel Hill	Gov. Elias Carr	1893 to 1895
John C. Chase, Civil Engineer	Wilmington	Gov. Elias Carr	1893 to 1895
R. H. Lewis, M. D., Secretary	Raleigh	Gov. Elias Carr	1893 to 1895
W. P. Beall, M.D.	Greensboro	Gov. Elias Carr	1894 to 1897
W. J. Lumsden, M.D.	Elizabeth City	Gov. Elias Carr	1895 to 1897
John Whitehead, M.D.	Salisbury	State Society	1895 to 1897
W. H. Harrell, M.D.	Williamston	State Society	1895 to 1897
W. P. Beall, M.D.	Greensboro	Gov. Elias Carr	1895 to 1897
R. H. Lewis, M.D., Secretary	Raleigh	Gov. Elias Carr	1895 to 1897
F. P. Venable, Ph.D., Chemist	Chapel Hill	Gov. Elias Carr	1895 to 1897
John C. Chase, Civil Engineer	Wilmington	Gov. Elias Carr	1895 to 1897
C. J. O'Hagan, M.D.	Greenville	Gov. D. L. Russell	1897 to 1899
John D. Spicer, M.D.	Goldsboro	Gov. D. L. Russell	1897 to 1899
J. L. Nicholson, M.D.	Richlands	Gov. D. L. Russell	1897 to 1899
R. H. Lewis, M.D., Secretary	Raleigh	Gov. D. L. Russell	1897 to 1899
A. W. Shaffer, Civil Engineer	Raleigh	Gov. D. L. Russell	1897 to 1899
Charles J. O'Hagan, M.D.	Greenville	Gov. D. L. Russell	1899 to 1901
J. L. Nicholson, M.D.	Richlands	Gov. D. L. Russell	1899 to 1901
Albert Anderson, M.D.	Wilson	Gov. D. L. Russell	1899 to 1901
R. H. Lewis, M.D., Secretary	Raleigh	Gov. D. L. Russell	1899 to 1901
A. W. Shaffer, Civil Engineer	Raleigh	Gov. D. L. Russell	1899 to 1901
George G. Thomas, M.D., President	Wilmington	State Society	1899 to 1901
S. Westray Battle, M.D.	Asheville	State Society	1899 to 1901
H. W. Lewis, M.D.	Jackson	State Society	1899 to 1901

*Died in 1902, leaving a five-year unexpired term, which was filled by the Board.

ROSTER OF MEMBERS—CONTINUED

NAME	ADDRESS	APPOINTED BY	TERM
H. H. Dodson, M.D.	Milton	State Society	1899 to 1901
R. H. Lewis, M.D., Secretary	Raleigh	Gov. C. B. Aycock	1901 to 1907
W. P. Ivey, M.D.	Lenoir	Gov. C. B. Aycock	1901 to 1907
George G. Thomas, M.D., President	Wilmington	Gov. C. B. Aycock	1901 to 1905
Francis Duffy, M.D.	New Bern	Gov. C. B. Aycock	1901 to 1905
J. L. Ludlow, Civil Engineer	Winston	Gov. C. B. Aycock	1901 to 1905
S. Westray Battle, M.D.	Asheville	State Society	1901 to 1907
H. W. Lewis, M.D.	Northampton	State Society	1901 to 1907
W. H. Whitehead, M.D.	Rocky Mount	State Society	1901 to 1905
J. L. Nicholson, M.D.	Richlands	State Society	1901 to 1905
J. L. Ludlow, Civil Engineer	Winston	Gov. C. B. Aycock	1903 to 1909
J. Howell Way, M.D.	Waynesville	Gov. R. B. Glenn	1905 to 1911
W. O. Spencer, M.D.	Winston	Gov. R. B. Glenn	1905 to 1911
George G. Thomas, M.D., President	Wilmington	State Society	1905 to 1911
Thomas E. Anderson, M.D.	Statesville	State Society	1905 to 1911
R. H. Lewis, M.D.	Raleigh	Gov. R. B. Glenn	1907 to 1913
E. C. Register, M.D.	Charlotte	Gov. R. B. Glenn	1907 to 1913
David T. Tayloe, M.D.	Washington	State Society	1907 to 1913
James A. Burroughs, M.D.*	Asheville	State Society	1907 to 1909
J. E. Ashcraft, M.D.	Monroe	State Bd. of Health	1909 to 1913
J. L. Ludlow, Civil Engineering	Winston-Salem	Gov. W. W. Kitchin	1909 to 1915
J. Howell Way, M.D., President	Waynesville	Gov. W. W. Kitchin	1911 to 1917
W. O. Spencer, M.D.	Winston-Salem	Gov. W. W. Kitchin	1911 to 1917
Thomas E. Anderson, M.D.	Statesville	State Society	1911 to 1917
Chas. O'H. Laughinghouse, M.D.	Greenville	State Society	1911 to 1917
Richard H. Lewis, M.D.	Raleigh	Gov. Locke Craig	1913 to 1919
Edw. J. Wood, M.D.	Wilmington	Gov. Locke Craig	1913 to 1919
A. A. Kent, M.D.†	Lenoir	State Society	1913 to 1915
Cyrus Thompson, M.D.	Jacksonville	State Society	1913 to 1919
Fletcher R. Harris, M.D.	Henderson	State Bd. of Health	1915 to 1919
J. L. Ludlow, Civil Engineer	Winston-Salem	Gov. Locke Craig	1915 to 1921
J. Howell Way, M.D., President	Waynesville	Gov. T. W. Bickett	1917 to 1823
E. C. Register, M.D.	Charlotte	Gov. T. W. Bickett	1917 to 1823
Thomas E. Anderson, M.D.	Statesville	State Society	1917 to 1923
Chas. O'H. Laughinghouse, M.D.	Greenville	State Society	1917 to 1923

*Died leaving unexpired term. †Resigned to become member of General Assembly.

STATUS OF SOCIETY MEMBERSHIP BY COUNTIES FOR YEARS 1906-1918

Counties	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918
Alamance	15	7	17	15	14	12	11	11	13	9	10	12	10
Alexander *a*	....	....	....	....	....	....	....	....	....	....	....	....	....
Alleghany	....	....	....	....	....	....	....	....	....	2	2	....	....
Anson	3	1	3	1	1	1	6	8	7	....	....	....	1
Ashe	....	....	....	....	1	....	....	....	....	....	....	11	15
Avery	....	....	....	....	....	....	....	....	8	7	9	9	7
Beaufort	10	15	15	11	11	16	15	14	14	14	14	10	11
Bertie	3	4	4	4	5	2	2	2	3	3	3	3	5
Bladen	4	4	3	3	3	4	4	5	7	7	6	9	8
Brunswick	4	4	....	4	2	2	2	5	4	5	....	....	2
Buncombe	37	47	48	54	58	63	64	69	68	70	71	74	76
Burke	8	10	9	10	13	12	11	13	15	17	17	16	17
Cabarrus	13	13	17	16	18	21	21	19	22	23	25	20	22
Caldwell	8	10	12	12	13	12	10	12	12	11	7	9	13
Camden *b*	....	....	....	....	....	....	....	....	....	....	....	....	....
Carteret	9	9	10	7	7	6	7	6	7	7	9	7	4
Caswell	3	3	3	2	1	1	1	1	1	1	1	1	1
Catawba	8	10	9	12	12	....	....	....	....	15	13	18	....
Chatham	....	6	1	2	2	6	....	14	15	12	11	11	11
Cherokee	3	....	....	9	6	7	9	8	7	10	9	11	10
Chowan-Perq'm'ns *f*	....	....	....	....	....	7	5	8	9	7	4	3	....
Clay *c*	....	....	....	....	....	....	....	....	....	....	....	....	....
Cleveland	12	14	14	13	13	14	15	15	16	13	13	16	16
Columbus	8	9	8	8	8	10	12	12	14	9	11	7	1
Craven	8	10	14	14	14	12	14	18	15	11	8	11	7
Cumberland	8	12	12	17	20	20	22	23	22	24	19	17	16
Currituck	6	6	3	3	6	4	4	4	6	7	6	6	1
Dare *d*	....	....	....	....	....	....	....	....	....	....	....	....	....
Davidson	11	12	12	12	13	13	15	13	17	13	9	20	20
Davie	3	6	6	6	6	5	6	....	....	....	6	5	4
Duplin	5	8	8	10	10	9	8	9	7	4	7	10	9
Durham-Orange	16	15	18	24	26	28	31	32	38	40	41	44	35
Edgecombe	4	8	8	10	10	11	11	11	13	13	13	10	10
Forsyth	20	21	26	30	25	29	31	32	37	39	42	45	37
Franklin	8	10	10	9	11	11	11	10	10	12	11	10	11
Gaston	17	22	25	25	27	29	29	30	27	26	25	27	27
Gates	4	4	4	....	....	....	....	....	....	....	....	....	....
Graham	....	....	....	....	....	....	....	....	....	....	....	....	....
Granville	7	8	11	12	12	8	13	12	14	11	16	16	14
Greene	4	5	5	6	6	6	5	5	5	5	6	5	2
Guilford	39	54	62	64	65	56	58	59	62	71	66	68	67
Halifax	9	10	10	7	6	2	2	11	11	7	15	8	1
Harnett	13	16	18	19	15	14	17	17	16	17	15	17	15
Haywood	7	10	11	15	13	10	11	13	15	11	11	11	9
Henderson-Polk	10	11	15	14	14	17	17	11	14	14	15	15	11
Hertford	8	8	9	8	6	2	....	8	10	4	1	5	10
Hoke	....	....	....	....	....	....	....	....	....	....	....	10	11
Hyde	....	....	5	8	6	6	6	7	7	....	....	....	1
Iredell-Alexander	19	18	18	18	17	12	9	9	14	16	9	20	11
Jackson	5	2	2	....	....	....	....	2	3	5	2	5	2
Johnston	9	11	15	13	15	19	18	18	19	21	19	22	16
Jones	....	....	....	....	....	....	....	....	....	....	....	....	....
Lee	....	....	....	....	....	....	....	7	8	7	8	8	6
Lenoir	11	12	13	9	12	6	8	9	12	14	15	16	15
Lincoln	7	8	8	10	10	10	11	12	13	14	11	9	11
Macon-Clay	3	3	4	5	....	....	....	4	4	5	5	4	6
Madison	7	11	11	12	....	....	10	7	8	11	9	10	....
Martin	6	9	9	13	13	13	12	13	14	14	15	17	12
McDowell	8	7	....	8	4	5	6	6	7	7	7	8	7
Mecklenburg	31	37	54	51	57	44	50	63	69	71	74	63	49
Mitchell	....	3	4	7	4	5	5	4	2	2	2	1	....
Montgomery	5	6	8	7	9	7	7	8	6	10	9	9	8
Moore	17	2	14	10	11	21	21	13	16	15	18	10	15
Nash	....	....	....	....	....	....	1	....	19	18	26	27	21
New Hanover	15	20	21	23	21	21	22	31	28	33	41	30	29
Northampton	7	9	9	8	11	9	1	12	12	11	10	14	11
Onslow	3	4	4	4	6	11	10	12	10	8	9	11	7
Orange *e*	1	1	1	1	1	1	1	8	....	....	....	....	....
Pamlico	3	3	4	5	4	4	4	5	5	5	5	5	4
Pasquotank-Camden-Dare	11	11	10	10	11	12	12	13	15	15	17	19	16
Pender	....	....	....	....	2	2	2	2	....	....	....	....	....
Perquimans	....	....	....	....	....	....	....	....	....	....	....	....	4
Person	6	7	8	9	9	10	11	11	8	11	13	12	....
Pitt	11	11	9	14	10	10	5	9	5	15	9	14	5
Polk *g*	....	....	....	....	....	....	....	....	....	....	....	....	....

STATUS OF SOCIETY MEMBERSHIP BY COUNTIES—CONTINUED

Counties				1909	1910	1911	1912	1913	1914	1915	1916	1917	1918
Randolph	6	6	9	9	10	8	9	7	12	14	11	13	11
Richmond	11	11	11	1	12	1	10	....	10	13	13	14	11
Robeson	16	24	24	20	15	22	23	35	24	16	22	16	8
Rockingham	2	5	5	1	16	16	16	18	19	17	10	4	14
Rowan	19	27	25	23	24	26	24	23	26	22	25	23	22
Rutherford	15	16	17	22	23	24	18	19	20	19	21	14	17
Sampson	7	9	11	10	11	11	12	12	14	14	18	15	10
Scotland	7	8	11	10	11	9	9	11	12	12	12	13	10
Stanly	9	9	9	8	11	10	11	11	13	14	9	14	11
Stokes	11	5	10	11	9	10	11	7	12	13	12	10	5
Surry	10	13	15	15	15	13	14	19	21	19	18	23	24
Swain	6	6	6	8	....	....	....	....	....	....	....	6	7
Transylvania	8	4	4	1	....	5	5	6	7	6	7	5	....
Tyrrell *h*	....	....	....	....	....	....	....	....	....	....	....	....	....
Union	9	14	14	14	14	15	16	17	16	16	12	13	15
Vance	6	6	8	9	12	11	11	11	10	11	13	10	4
Wake	39	42	44	49	53	56	54	41	53	57	62	70	56
Warren	....	....	2	....	....	4	5	5	5	8	7	7	6
Washington-Tyrrell	3	4	5	10	11	11	11	11	9	9	11	8	6
Watauga	....	....	....	....	....	....	....	....	....	....	....	....	....
Wayne	10	10	13	10	....	....	16	19	13	7	17	19	18
Wilkes	6	7	8	8	11	11	6	9	8	7	6	9	8
Wilson	10	12	12	16	17	17	17	17	24	22	22	24	21
Yadkin	9	10	11	8	6	6	6	7	7	6	....	....	....
Yancey	2	....	4	3	....	....	....	....	....	....	....	....	....
Totals	769	865	979	1012	997	996	1036	1133	1220	1221	1228	1271	1087

a See Iredell; *b* see Pasquotank; *c* see Macon; *d* see Pasquotank; *e* see Durham; *f* see Perquimans; *g* see Henderson; *h* see Washington.

HONORARY FELLOWS, MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

Adams, M. R. ---------- Statesville
Anderson, T. E. ---------- Statesville
Asbury, F. E. ---------- Worthville
Attmore, G. S. ---------- Stonewall
*Bahnson, H. T. ---------- Winston-Salem
Baker, J. M. ---------- Tarboro
Battle, K. P., Jr. ---------- Raleigh
Battle, Samuel Westray ---------- Asheville
Beall, W. P. ---------- Greensboro
*Bellamy, W. J. H. ---------- Wilmington
Bolton, M. ---------- Rich Square
*Booth, S. D. ---------- Oxford
*Bulluck, D. W. ---------- Wilmington
Caldwell, D. G. ---------- Concord
Clark, G. L. ---------- Clarkton
*Croom, J. D. ---------- Maxton
DeArman, J. McC. ---------- Charlotte
Denny, W. L. ---------- Pink Hill
Dillard, Richard ---------- Edenton
Dodson, Henry H. ---------- Greensboro
*Duffy, Francis ---------- New Bern
Edwards, G. C. ---------- Hookerton
Faison, I. W. ---------- Charlotte
Faison, W. W. ---------- Goldsboro
Fletcher, M. H. ---------- Asheville
Fox, M. F. ---------- Guilford College
Freeman, R. A. ---------- Burlington
Galloway, W. C. ---------- Wilmington
Goodwin, A. W. ---------- Raleigh
*Graham, Joseph ---------- Charlotte
Hall, Wright ---------- Wilmington
Hargrove, R. H. ---------- Robersonville
Harris, F. R. ---------- Henderson
Harris, I. A. ---------- Buncombe
Hicks, W. N. ---------- Durham
Hill, L. H. ---------- Germanton
Hudson, W. L. ---------- Dunn
Hughes, Frank W. ---------- New Bern
Hunter, L. W. ---------- Sardis
Irwin, J. R. ---------- Charlotte
Johnson, N. M. ---------- Durham
Jordan, T. M. ---------- Raleigh
Knox, A. W. ---------- Raleigh
Leggett, Kenelm ---------- Hobgood
Lewis, H. W. ---------- Jackson
Lewis, R. H. ---------- Raleigh
*Long, Geo. W. ---------- Graham
Long, J. W. ---------- Greensboro

*Deceased.

Love, W. J. ---------- Wilmington
McDonald, A. D. ---------- Wilmington
*McKee, Jas. ---------- Raleigh
McMillan, B. F. ---------- Red Springs
McMillan, J. D. ---------- Edenton
McMillan, J. L. ---------- Red Springs
McMillan, W. D. ---------- Wilmington
McNeill, J. W. ---------- Fayetteville
Meisenheimer, C. A. ---------- Charlotte
Meisenheimer, T. T. ---------- Morven
*Miller, J. F. ---------- Goldsboro
Moore, C. E. ---------- Wilson
*Nicholson, J. L. ---------- Richlands
Nicholson, Sam. T. ---------- Washington
Noble, R. J. ---------- Selma
Nobles, J. E. ---------- Greenville
*Pate, Wm. T. ---------- Gibson
Pemberton, Wm. D. ---------- Concord
Perry, M. P. ---------- Macon
Pharr, T. F. ---------- Concord
Pharr, W. W. ---------- Charlotte
Picot, L. J. ---------- Littleton
Prince, D. M. ---------- Laurinburg
Purefoy, Geo. W. ---------- Asheville
Register, E. C. ---------- Charlotte
Ritter, F. W. ---------- Moyock
Royster, W. I. ---------- Raleigh
Schonwald, J. L. ---------- Wilmington
*Shaffner, T. F. ---------- Winston-Salem
Sikes, G. T. ---------- Grissom
Smith, R. A. ---------- Goldsboro
Speight, R. H. ---------- Whitakers
*Stevens, J. A. ---------- Clinton
Summerell, E. M. ---------- China Grove
Tayloe, D. T. ---------- Washington
Taylor, I. M. ---------- Morganton
Thomas, G. G. ---------- Wilmington
Trantham, H. T. ---------- Salisbury
Tull, Henry ---------- Kinston
VanPoole, C. M. ---------- Salisbury
Ward, W. H. ---------- Plymouth
Way, J. Howell ---------- Waynesville
Weaver, H. B. ---------- Asheville
Whitaker, R. A. ---------- Kinston
Whitehead, John ---------- Salisbury
*Whitehead, W. H. ---------- Rocky Mount
Whitfield, W. C. ---------- Grifton
Whittington, W. P. ---------- Asheville
Williams, J. H. ---------- Asheville
Wilson, A. R. ---------- Greensboro

*Deceased.

HONORARY MEMBERS, MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

*L. McL. Tiffany ..... Baltimore, Md.
W. W. Keen ..... Philadelphia, Pa.
J. Allison Hodges ..... Richmond, Va.
*R. L. Payne ..... Norfolk, Va.
J. N. McCormack ..... Bowling Green, Ky.
R. L. Payne, Jr. ..... Norfolk, Va.
J. L. Ludlow, C.E. ..... Winston-Salem
Paul V. Anderson ..... Richmond, Va.
Stuart McGuire ..... Richmond, Va.
William J. Mayo ..... Rochester, Minn.
William Seaman Bainbridge ..... New York, N. Y.

*Deceased.

OFFICERS 1917-1918

President—Dr. Isaac W. Faison ..... Charlotte
First Vice-President—Dr. Wm. deB. MacNider ..... Chapel Hill
Second Vice-President—Dr. Joseph B. Greene ..... Asheville
Third Vice-President—Dr. Ben. F. Royall ..... Morehead City
Secretary—Dr. B. K. Hays ..... Oxford
Treasurer—Dr. W. M. Jones ..... Greensboro

OFFICERS FOR 1918-1919

President—Dr. Cyrus Thompson ..... Jacksonville
First Vice-President—Dr. J. W. Halford ..... Lillington
Second Vice-President—Dr. T. W. Davis ..... Winston-Salem
Third Vice-President—Dr. A. McN. Blair ..... Southern Pines
Secretary-Treasurer—Dr. B. K. Hays ..... Oxford

COUNCILORS 1916-1919

First District—Dr. W. H. Ward ..... Plymouth
Second District—Dr. K. P. B. Bonner ..... Morehead City
Third District—Dr. J. W. Tankersley ..... Wilmington
Fourth District—Dr. C. F. Strosnider ..... Goldsboro
Fifth District—Dr. Ben. Hackney ..... Bynum
Sixth District—Dr. Wm. deB. MacNider ..... Chapel Hill
Seventh District—Dr. J. E. S. Davidson ..... Charlotte
Eighth District—Dr. J. W. Ring ..... Elkin
Ninth District—Dr. M. R. Adams ..... Statesville
Tenth District—Dr. C. V. Reynolds ..... Asheville

CHAIRMEN OF SECTIONS

1919 Session

Practice of Medicine:
E. J. Wood, Wilmington.

Surgery:
L. N. Glenn, Gastonia.

Gynecology:
H. W. McCain, High Point.

Obstetrics:
J. R. Alexander, Charlotte.

Public Health and Education:
D. E. Sevier, Asheville.

Pediatrics:
Charles Roberson, Greensboro.

Physiology, Pathology, Bacteriology and Chemistry:
S. A. Stevens, Monroe.

Anatomy, Materia Medica and Therapeutics:
Wm. deB. MacNider, Chapel Hlil.

Eye, Ear, Nose and Throat:
A. M. Whisnant, Charlotte.

PROGRAM

TUESDAY, APRIL 16—10 A. M.

Call to Order—DR. L. B. MCBRAYER, Chairman Committee of Arrangements.
Prayer—REV. J. T. GARDNER, Southern Pines.
Addresses of Welcome—
"Mine Host"—Mr. Leonard Tufts.
On Behalf of the Moore County Medical Society—DR. A. MCNIEL BLAIR.
On Behalf of the Sandhill Section—HON. R. N. PAGE.
Response to Addresses of Welcome—DR. F. R. HARRIS, Henderson.
The President's Annual Address—DR. I. W. FAISON, Charlotte.
Report of Committee on Arrangements.
Report of Special Committees.
Announcements.

SECTION ON DISEASES OF CHILDREN

DR. A. S. ROOT, *Chairman*, Raleigh

Diseases that Can With Assurance be Referred to Absence or Derangement of Functions of the Ductless Glands—DR. A. S. ROOT, *Chairman*, Raleigh.
Diarrheal Diseases of Infancy—Their Causation, Complications, and Treatment—DR. CHARLES ROBERSON, Greensboro. Discussion opened by DRS. T. L. BOOTH and J. E. TIDWELL.
Causes of Sudden Death in Infancy—DR. L. W. ELIAS, Asheville. Discussion opened by DRS. B. G. ALLEN and J. E. HOBGOOD.
Appendicitis in Children—DR. J. F. HIGHSMITH, Fayetteville.
Congenital Syphilis—DR. J. B. SIDBURY, Wilmington. Discussion opened by DRS. L. G. BEALL and B. W. PAGE.

SECTION ON ANATOMY

DR. G. ALFRED AIKEN, *Chairman*, Wake Forest

Kidney With an Inferior Artery Entering Apex.
Complete Transposition of Abdominal and Thoracic Viscera.
Styloid Process Reaching Hyoid Bone—DR. G. ALFRED AIKEN, Wake Forest.

SECTION ON PATHOLOGY AND BACTERIOLOGY

DR. T. M. WEST, *Chairman*, Fayetteville

Pathologic Lesions of Bone as Demonstrated by the X-Ray—DR. L. R. PITTMAN, Fayetteville. Discussion opened by DR. R. P. NOBLE.
Pathology and Treatment of Chronic Gonorrhea—DR. C. O. ABERNETHY, Raleigh. Discussion opened by DR. T. V. GOODE.

TUESDAY AFTERNOON, 2:30

SECTION ON THE PRACTICE OF MEDICINE

DR. JOHN WHITEHEAD, *Chairman*, Salisbury

Acidosis—DR. JOHN WHITEHEAD, Salisbury. Discussion opened by DRS. J. L ADAMS and R. N. DUFFY.

The Cause and Prevention of the Kidney Injury in Acute Bichloride Poisoning—DR. WM. DEB. MACNIDER, Chapel Hill.

The Existence of Tropical Sprue in North Carolina—DR. EDWARD J. WOOD, Wilmington. Discussion opened by DRS. J. R. ASHE and H. B. HIATT.

Malaria—The Effects of its Toxin on the Kidney—DR. C. F. STROSNIDER, Goldsboro. Discussion opened by DRS. H. T. MOORE and J. H. HARPER.

Amebic Dysentery—DR. A. J. WARREN, Salisbury. Discussion opened by DRS. B. C. WILLIS and H. H. NEWMAN.

Lagrippe—With Special Study of its Sequelæ—DR. SEAVY HIGHSMITH, Fayetteville. Discussion opened by DRS. G. S. WATKINS and J. W. PEACOCK.

Pleurisy—DR. P. P. MCCAIN, Sanatorium. Discussion opened by DRS. W. L. TAYLOR and S. D. CRAIG.

Reviews of the Recent Advances in the Early Diagnosis of Pneumonia—DR. HARVEY P. BARRET, Charlotte. Discussion opened by DRS. B. M. MERIWETHER and L. F. MAGRUDER.

The Value of Leucocytosis in the Diagnosis and Treatment of Disease—DR. I. C. PREVETTE, Charlotte. Discussion opened by DRS. J. C. WIGGINS and J. C. RABY.

The Clinical Relation of Systolic and Diastolic Blood Pressure in Certain Circulatory Conditions—DR. H. H. NEWMAN, Salisbury. Discussion opened by DRS. P. R. HARDEE and E. P. GRAY.

The General Practitioner and Tuberculosis—DR. M. E. STREET, Glendon. (To be discussed with the following.)

Artificial Pneumothorax and War Cases of Tuberculosis—DR. MARY E. LAPHAM, Highlands. Discussion opened by DRS. R. T. UPCHURCH and C. W. MIMMS.

Angioneurotic Edema, a Cause of Hydrothorax, with Report of a Case—DR. BEN H. HACKNEY, Bynum. Discussion opened by DRS. E. S. BOICE and C. W. SUTTON.

The Past, Present, and Future of Medicine—DR. F. E. ASBURY, Asheboro. (To be discussed with the following.)

Present Medical Conditions in North Carolina—DR. H. D. STEWART, Monroe. Discussion opened by DR. J. M. TEMPLETON.

The Relation of the General Practitioner to the More Common Nervous Diseases—DR. J. P. MUNROE, Charlotte. Discussion opened by DRS. W. W. JOHNSTON and W. B. BULLOCK.

Hookworm Disease, Its Prevalence, Importance, Treatment and Prevention—DR. J. S. MITCHENER, Kinston. Discussion opened by DRS. J. W. HOOPER and E. B. BEASLEY.

SECTION ON SURGERY

Dr. L. W. Kornegay, *Chairman*, Rocky Mount

Carrel-Dakin Solution and Paraffin Dressings in Certain Conditions—Dr. L. W. Kornegay, Rocky Mount. Discussion opened by Dr. J. A. Speed.

Fulguration for Intravesical Neoplasms—Dr. Albert D. Parrott, Kinston.

Traumatic Brain Surgery in Civil and Military Practice—Maj. John W. Long, Greensboro. Discussion opened by Drs. A. T. Pritchard and Albert Parrott.

Diagnosis and Treatment of Ureteral Calculi—Dr. A. J. Crowell and Dr. S. R. Thompson, Charlotte.

The Improvement in Suprapubic Prostatectomy—Dr. E. T. Dickinson, Wilson.

Hospital Economics—Dr. C. D. Hill, Durham.

Report of Case of Strangulation of Diverticulum in Hernial Sac—Dr. Eugene B. Glenn, Asheville.

Typhlitis-Appendicitis, with Report of Some Interesting Cases—Dr. J. W. Wallace, Concord.

Strongyloides Intestinalis—Dr. H. F. Long, Statesville.

Secondary Operations in the Abdomen—Dr. George W. Pressly, Charlotte.

Significance of the Sigmoid Adhesion—Dr. H. A. Royster, Raleigh.

Subtotal Hysterectomy, Indications and Technique—Dr. Lyle S. Booker, Durham.

Transfusion of Blood—Dr. L. A. Crowell, Lincolnton.

On the Surgical Aspects of Toxic Goiter—Dr. N. D. Bitting, Durham.

Report of an Interesting Case of Exophthalmic Goiter—Dr. Foy Roberson, Durham.

Some Suggestions on the Administration of Anesthetics—Dr. J. C. Montgomery, Charlotte.

The Present Status of Gall-bladder Surgery—Dr. J. W. Tankersley, Wilmington.

Carbon Dioxide Ice: An Adjunct to the Surgeon's Armamentarium—Dr. Ben F. Royal, Morehead City.

Lecture on War Surgery. Illustrated with Moving Pictures—Col. W. O. Owen, M. C. U. S. A., Washington, D. C.

SPECIAL WAR SESSION

Tuesday, 8:00 p. m.

Major John W. Long, *Chairman*, Greensboro

Volunteer Medical Service Corps—Dr. Cyrus Thompson, Jacksonville.

Presentation of Service Flag—Dr. L. B. McBrayer, Sanatorium.

Service Flag Accepted—Major Chas. O'H. Laughinghouse, Fort Oglethorpe.

The Relation of the Medical Profession to the Army—Col. Robert E. Noble, Washington, D. C.

Address—Governor T. W. Bickett, Raleigh.

WEDNESDAY, APRIL 16, 9:00 A. M.

SECTION ON PUBLIC HEALTH AND EDUCATION

DR. C. V. REYNOLDS, *Chairman*, Asheville

Protecting Physicians in the Administration of Public Health Laws—A. McR. CROUCH, M.D., Raleigh. Discussion opened by DRS. JOHN THAMES and E. F. LONG.

What I Have Been Instrumental in Accomplishing in Eight Months as a Whole-time Health Officer—F. M. REGISTER, M.D., Tillery. Discussion opened by DRS. E. F. STRICKLAND and J. S. MITCHENER.

What Public Health Owes to the Infant—L. W. ELIAS, M.D., Asheville. Discussion opened by DRS. N. C. DANIEL and W. P. WEBB.

Pellagra—DR. JOSEPH GOLDBERGER, U. S. P. H. Service, Washington, D. C.

CONJOINT SESSION

WEDNESDAY, APRIL 17, 12:00 O'CLOCK

Conjoint session of the Medical Society of the State of North Carolina and the North Carolina State Board of Health.

MEMBERS STATE BOARD OF HEALTH

DR. J. HOWELL WAY, *President*—Waynesville
DR. RICHARD H. LEWIS, M.D., LL.D—Raleigh
J. L. LUDLOW, C.E.—Winston-Salem
DR. E. C. REGISTER—Charlotte
DR. THOMAS E. ANDERSON—Statesville
DR. CHAS. O'H. LAUGHINGHOUSE—Greenville
DR. EDWARD J. WOOD—Wilmington
DR. F. R. HARRIS—Henderson
DR. CYRUS THOMPSON—Jacksonville

EXECUTIVE STAFF STATE BOARD OF HEALTH

W. S. RANKIN, M.D.,—Secretary-Treasurer
C. A. SHORE, M.D.—Director State Laboratory Hygiene
WARREN H. BOOKER, C.E.—Chief, Bureau Engineering and Education
J. R. GORDON, M.D.—Chief Bureau Vital Statistics
L. B. MCBRAYER, M.D.—Superintendent State Sanatorium
GEO. M. COOPER, M.D.—Chief Bureau Rural Sanitation

ORDER OF BUSINESS

1. Report of work accomplished, and recommendations.
2. Discussions.
3. Election of Officers.
4. New business.
5. Adjournment.

WEDNESDAY, APRIL 17, 9:30 A. M.

SECTION ON GYNECOLOGY

DR. C. M. STRONG, *Chairman*, Charlotte

Conservation of our Women During and Following the Great War—DR. C. M. STRONG, Charlotte.
Prognosis and Treatment of Uterine Cancer. Illustrated—DR. WILLIAM S, GARDNER, Baltimore.
Radium in Cancer—DR. W. A. MONROE, Sanford.
Syphilis of the Uterus—DR. OREN MOORE, Charlotte.
Care of Post Perineorrhaphy—DR. T. M. WEST, Fayetteville.
Cause and Treatment of Backache in Women—DR. A. WYLIE MOORE, Charlotte.
Abdominal Cæsarean Section, with Case Reports—DR. MOIR S. MARTIN, Mount Airy.
Bilateral Pyelitis, Report of a Case—DR. ROBERT L. FELTS, Durham.

SECTION ON EYE, EAR, NOSE, AND THROAT

DR. J. B. WRIGHT, *Chairman*, Raleigh

Oesophageal Stricture—DR. J. B. WRIGHT, Raleigh.
Adenoids in Children. A Review of the Lymphatic Circulation of the Pharyngeal Region—DR. C. N. PEELER, Charlotte.
Cataract Accidents—DR. J. G. JOHNSTON, Charlotte.
Acute Mastoiditis—DR. H. M. BONNER, Raleigh.
The Infections Seen in Acute and Chronic Throats—DR. JOHN HILL TUCKER, Charlotte.

WEDNESDAY, 2:30 P. M.

SECTION ON OBSTETRICS.

DR. JOHN G. BLOUNT, *Chairman*, Washington.

The Frequency of Retroflexion of the Uterus Following Labor, its Causation, Prevention, and Treatment—DR. JOHN G. BLOUNT, Washington.
Uses and Abuses of Forceps and Pituitrin—DR. C. H. C. MILLS, Charlotte.
Rural Obstetrics—DR. M. T. FRIZZELLE, Ayden.
The Midwife Problem—DR. G. H. MACON, Warrenton.
Anesthesia in Obstetrics—DR. OTHO B. ROSS, Charlotte.

WEDNESDAY, 8:00 P. M.

Medicine in a War Hospital—DR. THOMAS MCCRAE, Philadelphia.
Tuberculosis and War—DR. C. L. MINOR, Ahseville.
The Control of Venereal Diseases in Extra Cantonment Zones—MAJOR B. W. BROWNE, Camp Greene, Charlotte.
Observations Regarding Surgery of the Brain and Spinal Cord—DR. WILLIAM SHARPE, New York City.
Dichloramin-T, the Newest War Antiseptic—CAPTAIN WALTER LEE, Philadelphia.
The Value of X-Ray in Diagnosing Gastro-Intestinal Disorders—DR. ROBERT H. LAFFERTY, Charlotte.

THURSDAY MORNING, APRIL 18

SECTION ON MATERIA MEDICA AND THERAPEUTICS

DR. CHARLES W. MOSELEY, *Chairman*, Greensboro

The Use of Solidified Carbon Dioxide in the Removal of Benign and Malignant Growths of the Skin—G. H. SADELSON, M.D., Charlotte.

Vaccines and Antitoxins—HAROLD H. NEWMAN, Salisbury. Discussion opened by DRS. FOY ROBERSON and W. H. FURMAN.

Care and Treatment of Neurasthenics—JOHN Q. MYERS, M.D., Charlotte. Discussion opened by DRS. JOHN SPICER and S. H. CANNADY.

Personal Experience with the Allen Treatment of Diabetes—DR. PARRAN JARBOE, Greensboro. (To be discussed with the following:)

The Modern Management of Diabetes Mellitus—F. M. HANES, Winston-Salem. Discussion opened by DRS. M. S. MARTIN and S. W. RANKIN.

The Therapeutic Value of Rest in the Management of Tuberculosis—DR. W. H. SHERRILL, Sanatorium.

Institutional Treatment and After Care of Drug Addicts—DR. W. C. ASHWORTH, Greensboro.

Scientific Massage with Reference to Hydro and Mechanico-Therapy—DR. CONYERS HERRING, Charlotte.

Report of Obituary Committee.

REPORT OF OBITUARY COMMITTEE.

FOREWORD

Soon after the adjournment of the 1918 session of the Medical Society of the State of North Carolina at Pinehurst, Dr. Benj. K. Hays, Secretary-Treasurer, was called to the colors, and at his request, approved by the President, we agreed to perform the duties of Secretary-Treasurer for Dr. Hays, now Captain Hays, during his absence. We are, therefore, responsible for the 1918 transactions, and any errors or omissions will be chargeable to us. We crave your fraternal indulgence, but more particularly do we crave your earnest coöperation, for never in the history of the world has medical organization been so important as today.

L. B. McBrayer,
Acting Secretary-Treasurer.

MINUTES

OF THE

MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

TUESDAY MORNING, APRIL 16, 1918

Call to order by Dr. L. B. McBrayer, Chairman Committee on Arrangements.

"Mine Host": Mr. Leonard Tufts, Pinehurst.

Address of Welcome on behalf of the Moore County Medical Society: Dr. A. McNiel Blair, Southern Pines.

Address of Welcome on behalf of the Sandhill Section: Hon. Robert N. Page.

Response to Address of Welcome: Dr. F. R. Harris, Henderson.

Invocation: Rev. Frederick Mack Gardner, Pastor First Baptist Church, Southern Pines.

President's Annual Address: Dr. I. W. Faison, Charlotte.

President's Address referred on motion to special committee.

Report of Committee on Arrangements.

Motion that privileges of the floor be extended to guests.

SECTION ON DISEASES OF CHILDREN

Dr. A. S. Root in the Chair

Diseases That Can with Assurance be Referred to Absence of, or Derangement with Function of, the Ductless Glands—Dr. A. S. Root, Raleigh.

Sudden Death in Infancy—Dr. L. W. Elias, Asheville.

Congenital Syphilis—Dr. J. B. Sidbury, Wilmington.

SECTION ON SURGERY

Dr. Albert D. Parrott in the Chair

Kidney With Inferior Renal Artery; Complete Ossification of Stylo-Hyoid Ligament; Thoraic and Abdominal Transposition—Dr. G. Alfred Aiken, Wake Forest.

Some of the More Important Bone Diseases as Demonstrated by the X-Ray—Dr. R. L. Pittman, Fayetteville.

Tuesday Afternoon

SECTION ON THE PRACTICE OF MEDICINE

The Cause and the Prevention of Kidney Injury in Acute Bichloride Poisoning—Dr. William deB. MacNider, Chapel Hill.

The Existence of Tropical Sprue in North Carolina—Dr. E. J. Wood, Wilmington.

Malarial Fever: The Effects of its Toxins Upon the Kidneys—Dr. C. F. Stronsnider, Goldsboro.

Amebic Dysentery—Dr. A. J. Warren, Salisbury.

The Incidence and the Importance of Pleurisy in Early Tuberculosis—Dr. P. P. McCain, Sanatorium.

The Clinical Relation of Systolic and Diastolic Blood Pressure in the Diagnosis of Certain Acute Circulatory Conditions—Dr. Harold H. Newman, Salisbury.

SECTION ON SURGERY

Dr. Albert D. Parrott in the Chair

Carrel-Dakin Solution and Paraffin Dressings in Certain Conditions—Dr. L. W. Kornegay, Rocky Mount. (Read by title.)

Diagnosis of Ureteral Calculi and Technique of Removal Without Operation—Dr. A. J. Crowell, Charlotte.

Improvements in Suprapubic Prostatectomy—Dr. E. T. Dickinson, Wilson.

Typhlitis, Appendicitis, With Report of Some Interesting Cases—Dr. J. W. Wallace, Concord.

Secondary Operations in the Abdomen—Dr. George W. Pressly, Charlotte.

Lecture on War Surgery—Col. W. O. Owen, M. C. U. S. Army, Washington, D. C.

Traumatic Brain Surgery—Major John Wesley Long, Major M. R. C. U. S. Army, Greensboro.

Tuesday Night

Major John Wesley Long in the Chair

Presentation of Service Flag: Dr. L. B. McBrayer, Sanatorium.

Service Flag Accepted by Major Joseph Howell Way, M. R. C., U. S. Army.

Letter read from Governor T. W. Bickett.

Owen Bill resolutions introduced by Dr. Hubert A. Royster.

Colonel Owen speaks on "Owen Bill."

Resolution of Major J. W. Long with regard to Council of National Defense.

Resolution introduced by Dr. J. P. Munroe with regard to selective draft.

Volunteer Medical Reserve Corps: Dr. Cyrus Thompson, Jacksonville.

Resolution introduced by Dr. Edward J. Wood with regard to wheat.

Wednesday Morning

SECTION ON PUBLIC HEALTH AND EDUCATION

Pellagra—Dr. Joseph Goldberger, U. S. P. H. Service, Washington, D. C.

SECTION ON THE PRACTICE OF MEDICINE

Present Medical Conditions in North Carolina—Dr. H. D. Stewart, Monroe.

SECTION ON SURGERY

Dr. J. W. Tankersley in the Chair

Esophageal Stricture—Dr. J. B. Wright, Raleigh.

Subtotal Hysterectomy: Indications and Technique—Dr. Lyle S. Booker, Durham.

Transfusion of Blood—Dr. L. A. Crowell, Lincolnton.

On the Surgical Aspects of Toxic Goiter—Dr. N. D. Bitting, Durham.

Report of an Interesting Case of Exophthalmic Goiter—Dr. Foy Roberson, Durham.

Some Suggestions on the Administration of Anesthetics—Dr. J. C. Montgomery, Charlotte.

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Esophageal Stricture—Dr. J. B. Wright, Raleigh.

Adenoids in Children: A Review of the Lymphatic Circulation of the Pharyngeal Region—Dr. C. M. Peeler, Charlotte.

Cataract Accident—Dr. J. G. Johnston, Charlotte.

The Diagnosis of Acute Mastoiditis—Dr. H. M. Bonner, Raleigh.

Conjoint Session of the Medical Society of the State of North Carolina and the North Carolina State Board of Health.

Meeting of the House of Delegates.

Wednesday Night

The Value of the X-Ray in Diagnosing Gastro-Intestinal Disorders—Dr. Robert H. Lafferty, Charlotte.

SECTION ON OBSTETRICS

Anesthetics in Obstetrics—Dr. Otho B. Ross, Charlotte.

Resolution introduced by Dr. J. Allison Hodges, Richmond.

The Relation of the Medical Profession to the Army—Colonel Robert E. Noble, Washington, D. C.

Remarks by Major Charles O'H. Laughinghouse.

Recent Advances in the Field of Neurological Surgery, and Specially the Diagnosis and Treatment of Brain Injuries—Dr. William Sharpe, New York City.

Thursday Morning

Meeting of House of Delegates.

SECTION ON OBSTETRICS

President I. W. Faison in the chair

The Midwife Problem—Dr. G. H. Macon, Warrenton.

Control of Venereal Diseases in Extra Cantonment Areas—Surgeon B. W. Brown, Camp Greene, Charlotte.

SECTION ON MATERIA MEDICA AND THERAPEUTICS

Vaccines and Antitoxins—Dr. Harold H. Newman, Salisbury.

The Relation of the General Practitioner to the More Common Nervous Diseases—Dr. J. P. Munroe, Charlotte.

Memorial exercises.

Report from the House of Delegates.

Presentation of Dr. Cyrus Thompson by Dr. I. W. Faison.

President Dr. Cyrus Thompson's inaugural address.

TRANSACTIONS

OF THE

Sixty-fifth Annual Session of the Medical Society of the State of North Carolina

OPENING EXERCISES

TUESDAY MORNING, APRIL 16, 1918

DR. L. B. MCBRAYER, Sanatorium: Several years ago, quite several, a gentleman with foresight came to this section of the country and the general understanding at that time was that the Sandhill section served the purpose of holding the world together and nothing more. They came into the forest here and bought seven thousand acres of land, and no doubt many of you when you stood in front of the handsome soda water fountains have seen on the front the word "Tufts." The son of that man is the owner of Pinehurst and all that therein is, and he is going to say to you a word of welcome.

I want to say to you, too, that it was Mr.Tufts that conceived the idea of sand-clay roads in this section and he contributed a large per cent of the cost of construction of the first thousand miles of sand-clay roads that were built in this section, and he was President of our State Fair one year, so that while he spends his winters north and while he was born in the north, perhaps, the north was fortunate in that respect, but he is a typical North Carolinian, and he has even contracted our brogue until, to put us in a dark room, you could not tell which was talking. He is one of us, and there is no man in North Carolina that is doing more to make the State blossom as a rose than is Mr. Tufts. It is a great pleasure to present him—Mr. Leonard Tufts.

"MINE HOST"

MR. LEONARD TUFTS, PINEHURST

I never had any difficulty in talking on the road subject because I have talked so much about it and have worked so much on it—and a good many of you here have worked with me—it is a very familiar subject. When it comes to giving an address of welcome I am never able

to do justice to the feelings that I have. I am able to talk on specific things but not on general things like the welcome such as I wish to extend to you here today.

I feel more strongly about the doctors than any one class of men. There are a lot of people in the United States that are patriotic and unselfish today, there are a lot of people who are giving their lives and their energies and their money toward helping this great world war and the people of this country and the people of other countries, but before we went into this war there were not many people who were so patriotic and broadminded and thoughtful of others with the exception of one class and that is the class of doctors. I have a great many friends among the doctors. A good many of them have stayed with me and their uncomplaining, self-sacrificing life has been impressed upon me more on that account. They get up in the middle of the night, if there is somebody that calls them who imagines that they are ill. I had an example of this kind a year or two ago. A friend of mine was staying with me, a doctor, and a call came, wanted to know if the doctor was there. He had to go in a hurry. A man's wife was very, very ill and the doctor was very tired. He got up and he went. The next morning at breakfast I asked him what the trouble was. He laughed. He said, "When the man called me, he was very much excited. I rushed over to his house. He said his wife was very ill. I went to examine her and I asked her what the matter was. She said she woke up and had a funny feeling in her arm and thought something was the matter." He asked if she had been sleeping on the arm. It turned out that her arm was asleep. I said, "What did you do? Didn't you cuss that man and woman out?" He said, "No, I laughed, thought it was a good joke." It would be impossible for any other class of men to laugh at a thing of that sort.

I want to say how much the people of this section appreciate your coming and how much honored we are in having such a broadminded people here together, people trying to keep us all well, in so self-sacrificing a way.

I thank you most sincerely for coming and I thank you for your attention.

Dr. L. B. McBrayer: For the Moore County Medical Society, whose guests you are, we will have an address of welcome by a physician who is so skilled that he is able to cure all his patients in six months and he has to seek other quarters for the other six—Dr. A. McNiel Blair, of Southern Pines.

ADDRESS OF WELCOME

A. McNiel Blair, M. D., Southern Pines

It is with pleasure that I voice a message of welcome from the members of the Moore County Medical Society to the members of the State Medical Society and its friends.

In the course of the 65 years of the existence of the Medical Society of North Carolina, this is the first time in its history that Moore County has been privileged to act as host for its deliberations.

We fully appreciate the honor.

For several years back the deliberations of the society have fallen to the lot of the cities, where all forms of recreation and diversion were possible for your entertainment.

There has been a trend in the past few years, and your executives have been endeavoring to make the sessions more business bent than pleasure bent, where scientific papers may be read and discussed without interruption by the introduction of too much of a social program. We trust that this session will prove most helpful in the character of its work, making us more efficient and more enthusiastic.

On the other hand, all work and no play is not helpful. Through the agency of our genial host, Mr. Leonard Tufts, some forms of outdoor sports have been arranged for your entertainment, and your committee has arranged for side trips so that each and every member may have an opportunity to become better acquainted with the Sandhill region, which, though young in the stage of development and progression, is none the less hospitable. Some twenty years ago the section was an unknown quantity, except to very few. All now recognize its many advantages, not only from its agricultural possibilities but its educational advancement. The new blood which is being infused into it each succeeding year causes a steady growth.

The Sandhill Board of Trade came into existence only a few years ago, which is a community affair. As the result of the energetic work done, the Eureka Farm Life School was made possible, which is perhaps one of the greatest achievements of the section, with the building of the James R. McConnell hospital, so named in honor of one of our brave boys who has lived and died in the service.

It is not unbefitting to mention that were it not for the hearty cooperation and persistent work done by the women of our county, this school and hospital would not have been built, and of which we are justly proud. In reference to the Eureka Farm Life School, its object is to give our young people, boys and girls, the advantages of training at nominal cost, which otherwise would be impossible. Another addition

to our community within the past three years, through the generosity of Mr. Derby, we have the Derby Memorial School for boys and girls, to say nothing about efficient private educational institutions and improved graded schools throughout the section.

Our State, recognizing certain climatological advantages in the section, has erected the State Sanatorium, second to none, which not only reflects credit upon the present able director and his associates, but upon the State and the medical fraternity at large.

Not only Moore County welcomes you, but the community as well.

Coöperative, enthusiastic and persistent community workers welcome you to this section, and trust that your deliberations will prove markedly advantageous, so that we may again at some future time have the honor and pleasure of welcoming you.

Dr. L. B. McBrayer: We have a gentleman in our section whom we might exhibit if it were necessary because he is the only man out of captivity and out of the insane hospitals that has ever voluntarily relinquished an office. He served this district and the State and the Nation well and wisely for a number of years in Congress. His district felt that they could not afford to be without his services, but for reasons known to himself he felt and desired that he should not return to Congress and he found it necessary to spend a great deal of his time after it became known in refusing insistent requests that the district be allowed to return him. As I remember it, he never had any opposition for the nomination after he was elected and he certainly would not have had any opposition at the time that he retired, but he is still serving his State and Nation. In fact, he is so constituted that it would be impossible for him to refrain from such things and it is more than likely that in the days to come his State will demand of him further service. Along with Mr. Tufts and a few others the name of Page stands out prominently in the development of this section and the name of Page is familiar, of course, to every man, woman and child in the State.

It gives us pleasure to hear an address of welcome on behalf of the Sandhill Section from the Honorable Robert N. Page.

WELCOME ON BEHALF OF THE SANDHILL SECTION

Hon. Robert N. Page

Some time in the month of December I was honored by receipt of a letter from the chairman of your Entertainment Committee, my friend Dr. McBrayer, asking me if I would deliver an address of welcome to this society on this occasion. However, he did not mention the date except in a general way. As I recall, his letter said some time next spring, possibly about the middle of April. I accepted. I very seldom refuse an opportunity to make a speech. While what Dr. McBrayer said is true, I did of my own accord lay down an office. I asked him in that letter of acceptance if he would be so kind as to notify me some time about the first of April the exact date of this meeting and while he did not reply to my letter I have every reason to believe he received it. I never heard anything from my friend until yesterday afternoon, about 4:30, when a telegraph messenger boy came to my office with a telegram from Dr. McBrayer and that telegram read, "This is to remind you that the Medical Society meets at the Carolina in Pinehurst tomorrow morning, at 9:30." I responded very promptly.

I am glad indeed to have the opportunity to welcome to this section the members of the North Carolina Medical Society. I feel that while I am not eligible for membership in the Sandhill Board of Trade, and I do not live in the sandhills, I did for a number of years, it occurred to me as I came along this morning in my car from home that possibly one of the reasons that Dr. McBrayer asked me to perform this service he thought I could say something about the sandhills that some one who lived in the sandhills might not because of modesty care to say. I was one of the pioneers of this section. Thirty-seven years ago I came to Moore County not in a constructive capacity, but as I look back now in a destructive capacity. I destroyed as many fine long leaf pine trees as almost any man in the State of North Carolina. It was wanton waste as we look back upon it, and yet the development of this section would not have come had that not been done by somebody, and perhaps I had as well been the culprit as anybody. That led to a development that I don't have to tell you about, if you will take the time to ride a few miles, over the sand-clay roads, to see the marvelous changes that have taken place, the development along all possible lines, in this magnificent section. It is a very fitting thing that the North Carolina Medical Society should meet in this section because as I understand it in these latter days your profession, in the self-sacrificing spirit that has been shown by no other profession on earth, the main object of your profession being to remove those things that make for disease, to keep

people from being sick. Now, to put that plainly, it means you are spending your lives in an effort to take money out of your own pockets, because the more sick people there are, the larger the remuneration. Yet there is no other class of men that I know anything about, that come under my observation, nor do I think there is any other profession, who so deliberately and with malice aforethought spend their lives and their energies in the destruction of the thing from which they make their living. After all, I don't know if you gentlemen should be given credit entirely for being so self-sacrificing because after all there may be larger remuneration, if not in dollars and cents certainly in the esteem in which your profession is held and the self satisfaction in your own lives from avoiding the illnesses to which people are subject rather than curing these illnesses after they have been contracted. No other profession perhaps in North Carolina in this time of its crucial testing has made larger contribution of patriotism and sacrifice. This service flag that hangs in the rear, is visible, tangible evidence of the number that have gone from your ranks into the service of their country, and it speaks eloquently of the patriotism and self-sacrifice of the profession to which you belong. We who are laymen at times when we are perfectly well, when there is not the slightest symptom of pain or disease, are inclined to be somewhat critical of the medical profession. I don't know whether you gentlemen here do or not, but I hear in assemblages of laymen almost every week from people who know nothing about the matter, criticisms of what the doctors do not know and what they pretend they do know. That criticism proceeds from the man who is feeling absolutely well. He never does that when he is sick.

You are welcome here, as Mr. Tufts has told you as your immediate host. The section feels honored at your coming. It would like to show it in a more tangible way.

In every community in this State the doctor stands for something. He is at least one of the important people of the community. To begin with, he would not belong to your society or the profession if he was not a man of intelligence and training, a man whose intelligence had been trained, a man who was fitted for the high duties of citizenship. My observation and my experience has been that we have no higher standard in any of the communities of our State, or the State as a whole, of real, genuine citizenship than can be found in the medical profession. By a good long experience in political life I found out something else about them. It becomes necessary for a man to analyze the influence of various men. Those of us who have been long in politics begin to size up the influence of people in communities. I am going to relate my own personal experience and observation. If I had to confine myself in any community for the influence, the proper political influence, and I am

speaking only of proper political influence, of any one element in it, (and some of you may be surprised for naturally you would think the lawyers in a community exert a larger influence), the man who is the most influential political factor is the man who travels and sells goods; but the next most influential man is a member of the medical profession. I had rather have one of you gentlemen, if I were a candidate for office, as you went into a home where there was illness and as you sat around the fireside speaking, I would rather have you mention my name than have any other man pronounce a eulogy upon me, because it goes further in that family. You are always welcome in the family when there is illness.

I shall not prolong these remarks. We are glad to have you here. We hope you will find your stay pleasant in this section. Those who have preceded me have mentioned some of the developments that have taken place. Pinehurst speaks for itself. It was established by the elder Mr. Tufts in 1895. The present Mr. Tufts has increased its usefulness and capacity for contributing to the health and pleasure of a great many people. The center here, Pinehurst, has contributed largely to other active influences for good in the community, the Farm Life School, the James McConnell Hospital, the State Sanatorium, and those of you who have not visited that excellent institution should do so before you leave here. You will find farms where a few years ago grew the long leaf pine, you will find that they are not only level farms, but they are attractive farms, and that the amount of cotton, tobacco and wheat and other things that are raised are equal to the amounts in sections of longer agricultural development. We need doctors here as little as any place on earth. It is the most healthful place not only in the State but elsewhere. For that reason Pinehurst, Southern Pines, and the State Sanatorium were established. I see in this audience one of your Society who came here about the time I did, just about ready for somebody to dig a place three by six to put him away. He is living yet, vigorous and strong. There are numerous other instances of men restored by coming here. Paraphrasing the old toast, "*This is* the land of the long leaf pine, the summer land where the sun doth shine, where the weak grow strong and the strong grow great, *the Sandhill section of the Old North State.*"

Dr. L. B. McBrayer: The response to the addresses of welcome will be delivered by a gentleman whose name and face and voice are familiar to you all. It is impossible for me to say the things about him, the good things that he deserves, but you know them all, so I am simply going to present Dr. Fletcher Reese Harris of Henderson, who will respond to these addresses of welcome.

RESPONSE TO ADDRESSES OF WELCOME

F. R. Harris, M.D., Henderson

It is a great pleasure to be here and we duly appreciate not only the *hearty words* of welcome but the welcome itself is better than words. Let me say in the outset that we promise with all our hearts to "eat, drink and be merry," but we sincerely trust that we may not be called to the Bible causal phrase "for tomorrow ye may die."

Once in Boston, twenty-five years ago, a northern friend was trying to describe a place in North Carolina about the latitude of Wilmington —right on the snow line, where summer and winter were so deftly mixed that the birds forgot all but their mating time—where it was never too hot nor too cold. Pinehurst was not then on the map, but I now know he had reference to this Sandhill section. God has given you a great climate and a country beyond description. Sand! A kind providence has dealt bountifully with you in this regard and you have your water filtered by God's own hand! (We have to filter ours.) But we have come, and we trust not empty handed. We bring strong determination—purposes vibrant with life-grit—sand if you please, metaphorical sand through which we expect to turn the learning of an effete civilization, and save for man that which is pulsing with the eternal present; and more indeed, it ought to help to usher in the new day with new hopes and new aspirations.

When Christ was on earth he saw a man who was born blind. The Jews asked the Christ who did sin, this man or his parents that he was born blind Christ answered, "neither he nor his parents; but that the works of God might be manifested." In our everyday work, in our grind of detail, in our restless striving for the most practical, in our unexpressed and inexpressible sympathy for the suffering of the sinless unfortunate and when in all our best efforts we have our failures, we sometimes forget that our problems are tasks for gods! So you do *yourselves* honor when you receive us. While in all humility we appreciate your kind greeting, yet like Paul we magnify our office and like the Man of Galilee ask that you receive us "for our works sake." Cure blindness? Greater works shall ye do—prevent blindness. Cure deafness? Do more—prevent deafness. Cure the ills and sickness and needs of humanity? We must do more! We must *prevent,* come beforehand, and ward off all sickness and destitution. It is our business to free men from slavery to the laws of health and throw these around him as a safeguard, so that those same laws may serve him as their master; and this is our warfare.

It is our business to prescribe a balanced ration in terms of a man's understanding. It is our business to dethrone Venus from men's minds; it is ours to abolish her adulterous worship and tear down her brazen images forever from the galaxy of the gods. It is our business and our patriotic ambition to *go over the top* in the fight of the *science of manhood* versus the kult of imperialism, and to free men in all their possibilities of development, and to join in the great struggle of the fit against the causes of unfitness, and to make sure that every child of the race has more than an even chance for physical and mental perfection.

In this new day of new ideals there must be new practices. The days of autocracy and aristocracy, of democracy and ochlocracy are behind us and every man is to become a law unto himself, because being obedient to all he is master of all; and this is the new freedom. The time is at hand when men no longer, in the words of Sallust, shall be "obedient to their bellies." Hoarded food-stuffs—banked up millions—unused knowledge—are things of the past! All things are yours. Whatever can be used must be used. The day is coming when knowledge of law, or science, or commerce, or nature, or grace, will not be sold. Our *country* must have it all; and he who hoards, be it money, or knowledge, or power, or life, is an alien in the commonwealth of humanity.

So we are here, Mr. President, to think new thoughts and to reconstruct the old. We are here to add our part to the world of democracy in so far as it means the mastery of man in every field of endeavor and in every prospect of prosperity. So we undertake to go over the top in the vanguard of science—over the top with our money, our minds and our men—over the top to man's perfection in body and mind and spirit—over the top to our highest ideals of man before mannerism or militarism or mammon—over the top where out of the *writhing, reeking,* gory travail of the nations shall be born the new man emblazoned with the new freedom. [Prolonged applause.]

Dr. L. B. McBrayer: The sixty-fifth session of the Medical Society of the State of North Carolina will soon be called to order. Before doing so it is fit that we should ask the Great Physician to meet with us and give us aid and comfort. Dr. F. M. Gardner of Southern Pines will invoke the divine blessing.

INVOCATION

Dr. Frederick Mack Gardner, Pastor First Baptist Church, Southern Pines

Almighty God, our Father, and the Father of our Lord and Saviour Jesus Christ; we lift up our hearts to Thee in gratitude and in praise. We thank Thee that we are living today in Thy world, under Thy care and protection; that we are enjoying the life which Thou hast fashioned in Thy own likeness; and we pray that the responsibilities that rest upon us in this high and holy privilege may be increasingly recognized. We thank Thee that Thou art calling men to holy service, and that all who are faithful in life are fulfilling the ideal set for them.

We pray Thy special blessing upon these men and women who are giving their lives toward the fulfilling of this ministry, and as they are going about doing good, may they realize that they are fulfilling the spirit, and following in the steps of the Great Physician, who delighted to alleviate suffering and bring enlargement of life to the human race.

But today, Father, we are thinking especially of those who have gone away from the State and have devoted their skill and their ministry where it is so essentially needed at this hour. Remember the large company who are in the camps and with the army and navy, who are perhaps at this very hour binding up the wounds of many casualties that are occurring on the great battle front. Father, we pray that they may be given special wisdom and direction in this noble service in which they have consecrated their ministry and skill and risked life itself that they may have worthy share in this time of the world's greatest need, and may their services be so successful as to prolong the lives of many who are in peril.

May the deliberations of these days, in the consecration of learning for the enrichment of human life, bear good and abundant fruitage; and when each returns to his home and to the common tasks and daily round in the city or village in which he may serve, and when all life is done, may he realize as he folds his garments about him and lies down to rest, that he has had some worthy part in making life better and fuller and freer. In the name of Him who came in love, who died in sacrifice, and who lives to welcome and reward those who follow in His steps, Amen.

Dr. L. B. McBrayer: Once each year this Society bestows upon one of its members the highest gift it has at its command. It gives me great pleasure to present your President, Dr. I. W. Faison.

ANNUAL ADDRESS OF PRESIDENT

I. W. Faison, M.D., Charlotte

We are happy to be here with you today in this famous resort, Pinehurst, known not only throughout the United States, but other countries. A wonderful vision came to Mr. James W. Tufts, while he was locked up in the cold, frigid east. Out of this vision came the preparations of this wonderful resort. Mr. Leonard Tufts, a worthy son of a worthy sire caught up this vision and has fully developed the real wonder of our State. He places the key of this resort that unlocks all of its mysteries into my hands, and asks me to extend to you further welcome to its pleasures.

My medical brethren, I take great pleasure in tendering you my heartfelt thanks for bestowing upon me this honor, the Presidency of the North Carolina Medical Society, the highest honor that you can give. The responsibilities are heavy and many, and worthy of the best efforts of the most matured men within our ranks.

The absorbing interest in the Nation's mind today is preparedness; hence, I felt it would not be amiss to speak to you today of one of the special branches of preparedness, this being the conservation and welfare of our children. When we stop long enough to fully grasp the meaning of this awful world war, where men are killed by the thousands, yes hundreds of thousands—we realize that their places can only be filled by growing more children. We well know now how high the death rate of these little ones is. In America alone, at least three hundred thousand died last year. We also know that a great many of these died from preventable diseases, and these came about to a great extent from carelessness and absolute ignorance on the part of their mothers. Still there are worse things than death, to exist and go through this world a dwarf, deformed and crippled is worse than death. We as medical men, and especially the pediatrist among us must look with more concern for the betterment of these children. We can and must bend our energies that the girl babies shall grow and develop into magnificent forms and attractive beauty, and the boy babies into splendid and strong manhood. I can't conceive the idea that the great Divine Creator ever intended that His created creatures should fall so far below perfect womanhood and manhood as we so often see. Still when we look around and about us daily, we see these little deformed and helpless ones. The young of other kinds don't impress us in this way. This very fact must force the responsibility of the human young upon us—we well

know that the human young is the most helpless and dependent on other things than any of the young of all other kinds.

This has its meanings and responsibilities. No man was created to be eternally lost, but left a free agent to accept his own destiny, so also we as human beings were created with the power to think, to reason and to act. The responsibility was placed upon us to take the human young and so direct them that they should come into the full possession of well developed bodies and trained minds. You fully realize the universal fact that the greater percentage of the babies born are along the lines of perfection at their birth.

Gentlemen, this responsibility is great, and growing greater. Just for a moment let your minds compass the results of this awful, devastating, cruel, murderous war—millions of men or more dead. How many millions more to die or ruined, no man can say. Women ruined, children maimed or driven by starvation to utter undevelopment or death. This is an awful picture, but has the half been told? The subject of birth rate is beginning to worry the powers in authority. Man power is waning too rapidly. Men are publicly speaking from our platforms, even in this country advocating that our women should marry at once and shoulder their part of the war responsibility as to future preparedness if there should be another war in the future years, which most probably will, for the specific purpose of increasing our birth rate. I am glad to say that we can point now with some pride to the existing birth rate in our own State. Today it stands higher than the birth rate of any other State in this country. This may mean that it is because our people are poorer—it may mean that we are more American than any other, which I think is true. We stand out preëminently ninety-nine per cent true natural born Americans.

In my time I attended professionally a poor fellow's family, composed of himself, wife and eight children. Again I was called to be present at the birth of another baby. I was so engrossed with the thought as to how he fed and clothed them that I seriously asked him why he continued to add to his already house full of children? Won't you try to put a stop to any further increase and greater responsibilities? His reply still rings in my ears—"Why Doctor, children are the only things I can have on a credit."

When shall this work of conservation and better welfare begin? Shall we start at the prenatal or even further back to the premarital period? The premarital period seems almost uncontrollable. My experience in life has been that when a woman and man decide fully in their minds to marry, certificates of health or parental permission will not stand in the way. We can do much during the prenatal stage. "Every child has

the right to be well born." A well poised, healthy happy mother with a perfectly formed beautiful baby is a most wonderful picture. To this momentous end, environment and medical men, especially the obstetrical men should leave nothing undone. At the very threshold of gestation this special overlooking should begin. The prospective mother especially during the first gestation should be under the guiding hand of an obstetrician. She is ignorant of conditions as they will arise, she should be directed all along, that the arising and developing conditions may be explained to her, and made as easy for her as possible, that the on-coming offspring may reach the goal of perfection. Special and perfect advice will add much to this end. Her diet, exercise and perfunctories must all be directed properly—what foods to eat and when certain foods prohibited, that she may avoid some of the most awful and serious conditions for self and baby. The time for parturition at hand, the first time, especially is fraught with many, many dangers, and wonderful responsibilities both to mother and child. The most important step now is the employment of an educated, trained, sympathetic and patient obstetrician. From unavoidable conditions in life, this cannot always be obtained.

The medical profession in this State should combine its efforts to induce the medical schools everywhere to see to it that our medical students are more thoroughly taught, and specially trained in this special branch. Not only in the lecture room, but by bedside teaching and practice.

Just a few years ago in the *A. M. A. Journal,* Prof. J. Whitridge Williams, Obstetrical Professor of Johns Hopkins, boldly attacked the teaching of this special branch of medicine, demanding better teaching. He stated that only one or two schools pay just and proper attention to this branch, and that unfortunately his school was not one of these. He went further to make the unqualified statement—that instead of an educated, well-prepared medical obstetrical profession, that we had a body of men midwives. This is an awful accusation. Is it true? That a man to be an obstetrician in the true sense of the word should be able to make a correct diagnosis of the conditions of the pelvis, the exact position of the on-coming child, should decide scientifically what was to be done, he should be able to judiciously and scientifically to properly apply and use forceps, should be able to perform versions, correct all malpresentations, should be able to do properly Cæsarean section, should be prepared for sudden blood tranfusion, should be able to repair aseptically and surgically all unfortunate and unavoidable traumatism during parturition, and last but not least, should be able to direct the care and handling of the baby. Was he right or wrong? What is the verdict of our profession as a whole throughout this country? I am

of the opinion that I fear this charge is too true. The infant now is at the threshold of life, it now depends on us to care for it. It was created to make a handsome, well formed man, or a beautiful, lovely woman.

True conservation and best welfare begins with mothers trained and educated and willing to give their aid. I am now able to say this is true with most of our own mothers. With good prenatal gestation the future of the population of our beloved State will be nothing short of the best. The State acted wisely and well when she demanded midwives to register; that a solution of the silver salts should be distilled into the eyes of every newly-born child. We too well know the gonococci dwell in the palaces as well as the hovels.

The result of neglect here is too awful. A human being perfect in every other way, wending his way through life with one eye, often with no eye. We must realize that the estimation based on the best data obtainable is that out of every eight babies born, one dies during the first year. If our vital statistics were better recorded and fully reported, I fear it might be, even worse than that. This may or may not be true. Still I know that we should demand laws that would give us a perfect vital statistics in this State. This waste of our children is preponderous and even worse when we are forced to acknowledge this lamentable fact, that at least one-half of them die from preventable causes. These bare facts stare us squarely into our faces and charge that we are *particeps criminis* to this shameful neglecting of our full duties to these little ones, or we must plead the baby act of ignorance.

Not only is this true to the death rate, but still further, deeper and more appalling is the lamentable fact, that so many suffer from unnecessary sicknesses, leaving them marked and handicapped for the race of life set before them, which sicknesses are preventable. United efforts are being made to meet them and do away with these conditions. Statistics show us yearly the reduction of this death rate and the betterment of the child. Place after place, the death rate has been reduced ten to fifty per cent—we can do the same. We must do the same.

Gentlemen, and especially the Board of Health, the time has come when the laws as to health should be rewritten. We have progressed far enough along the lines of contagion and infection to have more specific knowledge and give better advice. We realize fully that the younger the child the less the force that child has to resist any kind of sickness, therefore by law and by every intelligent means they should be protected, both by education of our medical men, our mothers and fathers and our school teachers.

The subject of quarantine and isolation is exceedingly important, and

should be taught thoroughly and demanded by law. The infectious diseases including the ones that are contagious are now so well understood that we can classify and explain them so our people can understand them. Education along this line will be the means by which all objection to proper regulations can be eradicated.

We know today that measles, German measles and chickenpox are air-borne diseases, that smallpox is both air-borne and a contact disease. That scarlet fever is a contact disease, and if air-borne at all, but slightly so.

These facts enable us to class them so that we can rewrite our laws on the statute books of this State to a better purpose. All five of these diseases are certainly transmissible from the first prodromic symptoms. During this period the spread of these diseases is at the highest. We have no record that the first three—measles, German measles or chicken-pox—are carried by a third party unless going out of the bed with a person affected and getting into the bed with a nonimmune. Smallpox and scarlet fever can be carried by a third party or many other objects.

The contagion in the first four being air-borne, close contact is not necessary. Scarlet fever not air-borne, but a contact disease, must be cared for in a different way.

The transmission period in the first three diseases begins at the first prodromic symptoms and lasts in full effect till the temperature drops to normal and the rash begins to fade, not completely gone.

The transmission cause now rapidly wanes. The younger the children the more serious are all these diseases, and everything possible should be done to prevent them.

I think the period of isolation in the first three should be fixed in new statute to fifteen days from the first symptom of manifestation. Our present fixed time is too long. Education demands a shorter time. I think a card should be as now put up at every house, but simply to notify outsiders not to go in. The patients should be isolated solely for the purpose, not to aid in spreading the diseases. The spread of these three diseases is in the patient *per se*. For scarlet fever and smallpox I am heartily in favor of a rigid law of quarantines, which should demand complete isolation and rigid quarantine. In both of these diseases the minimum period of quarantine should be six weeks, and longer at the discretion of the physician and health officer. As the cause of contagion is transmissible from the first prodromic symptoms till desquamation is complete and all secretions from nose, throat and ears cease.

For the communicable diseases the conditions change. Mumps—

transmissible from onset and till the swelling of the parotids subside—should be isolated and placarded fifteen days.

Whooping-cough, not air-borne, but contact. One of our most fatal diseases for children under two years of age; transmissible from beginning of the catarrhal stage, a week or ten days before we can make a diagnosis, and until the paroxysmal stage has passed. After an epidemic commences every case with the so-called cold should be considered whooping-cough. Isolation, both of the patient and the exposed children should be absolute till at least fourteen days have passed. A card should be put on the door and both the case and the exposed isolated. This should be rigidly kept on six weeks, and continued until the cough ceases. This is one of our most fatal diseases in childhood, therefore we must not play to the whims and weaknesses of our patrons. The law should be fixed and a penalty imposed for not obeying it.

The vaccines gotten up by the different biological houses, in my hands, have proven in the majority of cases very beneficial. The use of them has not met with general favor, I admit. I am of the opinion that doses given are not large enough—nor is it given early enough. My initial dose is 250,000,000; 500,000,000 the next day. Then every three or four days 1,000,000,000, and continue for six to eight doses. I give it in every case, from the youngest baby, to adult life. I am of the fixed opinion, if by any carelessness a young baby is exposed and contracts whooping-cough, that it would be nothing short of criminal neglect.

Diphtheria in the past was one of the most fatal diseases among children, and added greatly to our mortality rate. It is a contact disease, transmissible from the beginning of the exudated membrane until the membrane disappears, and until reports of negative cultures from both the throat and nose are shown three days apart. Complete isolation and rigid quarantine of the patient during this time should be enforced.

The discovery of antitoxin has been a wonderful boon to the children, and has reduced the death rate by the thousands. It should be given early and in larger doses than a good many give it. In the great majority of cases 30,000 units will cure most of the cases. Quite a mooted question exists in our profession whether or not to give it to every exposed child in a family of children where one has the disease. The Chick test will show the ones hypersensitive to this disease, and of course, these should have the prophylaxis dose. Those that show that they are immune by natural causes, should not be given antitoxin. The nightmare of anaphyllaxis lurks in every person, sudden and fatal results have followed small prophylactic doses. A warning to the wise ought to be sufficient. Always take in consideration this awful danger.

Tuberculosis, the white plague of our times, still mows down our

children by the added thousands. The cause of this disease is locked up in the sputa. Therefore it is the patient to study and direct. My opinion is that the State should demand by law that every child should be vaccinated for tuberculosis—certainly before the fifth year—with the Von Pirquet skin test, the safest and best of tests. Children hypersensitive or with the disease will react. It is now estimated that only ten per cent will show this reaction at this period. This is the golden time to begin treatment and cure. I am persuaded that if this plan was put into full effect that within the next three generations tuberculosis would be conquered and driven from our country.

Such wonderful progress has been made in perfecting the plans of feeding children during infancy and after infancy, that the death rate during these periods has been markedly reduced. We too well know that during infancy nothing equals the milk of a healthy mother. The past few years has shown that the mothers are more willing to nurse their babies, than before for a long time. No infant should be taken from the mother's breast until it is absolutely proven that the milk will not answer, still about six or seven months is the average time for them to furnish sufficient amount of milk of good quality. It then becomes exceedingly important and rather easy to do. Where the supply of milk is totally inadequate, or altogether absent we are taxed to supply the necessary amount with proper quality. There is really no ordeal more trying to the pediatrist, a life in the balance first and foremost. Also that this supply shall meet the demands both to hold on to this life and supply an amount both in quantity and quality to meet every demand that nature makes that the baby shall grow, coo and develop to the fullest extent. With the first object, toward making a full man or woman for the future. While this period seems important and weighs so heavily upon the pediatrist the immediate period just following infancy is just as important, or even more so.

This growth and development must continue with regularity. Milk, though good and very important, cannot entirely supply the demands of nature. Perplexities of serious and dangerous proportions daily tax us. Waste and growth, two task masters are at our heels all the time. We must know what has to be done, or walking epistles of our ignorance will stalk the streets proclaiming our ignorance, or criminal neglect.

Still medical men would call in a surgeon, and obstetricians a nerve specialist, or an eye and throat man will hang on to these children, blindly leaning on nature for help till the child is dwarfed, distorted or ruined for life.

If it is possible for me to arouse interest in these little ones so that the benefits I hope for shall come to them, I shall feel more than paid

Dr. J. P. Munroe, Charlotte: I move that the President's address be referred to the proper committee.

Motion carried and committee on President's address appointed.

ANNOUNCEMENTS BY THE CHAIRMAN OF THE COMMITTEE OF ARRANGEMENTS

Dr. L. B. McBrayer: Dr. Mudgett, whom you all know, is chairman of the entertainment committee with reference to the Farm-life School and the James McConnell Memorial Hospital. I want to call your especial attention to this Farm-life School, and I want to say to you that it is the best farm-life school in the world. I may have taken in too much territory. I am going to say it is the best farm-life school in the United States. They do not have any farm-life schools on the other side; they are too busy with other things. On one occasion I listened to Dr. Philander P. Claxton, United State Commissioner of Education, and he said six miles out from where he was speaking there was the best farm-life school in the United States, and I thought if that was the truth it was worth going out to see. A few of us got a car and drove out there, and I will say that school is not in a class with the Farm-life School of the Sandhill Country. Therefore, it is well worth your while to go to see it. With the Farm-life School out in a typical country section is the only country hospital in the world that I know anything about. It is a hospital in every detail, it is well worth going to see, if for no other reason than the fact that it is a hospital in a country community, and it is serving a splendid purpose. Dr. Mudgett will tell you all about it.

You will see automobiles from time to time that have a streamer announcing that they are guest cars. That means that if you want to take a ride anywhere over this section of the country all you have to do is to call a car and go anywhere you want to go. Dr. Mudgett will furnish the cars to go over the Farm-life School and the hospital.

Southern Pines is hard by and it is, perhaps, the nicest town, the nicest small town in North Carolina or the South. If you notice as you drive through there you see a two-room house it will be of such architectural design and so tasty and nice that it looks like you would be just as happy there as if you were living in a mansion. That one thing makes it worth while driving through the town.

It will be a pleasure for any who will visit the Sanatorium. Certainly, we should like for you all to do it, but any who care to and who

will go will be provided with transportation in the guest cars, at such time as will not interfere very much with the sessions.

It is requested that the physicians who have not registered register.

There will be dancing every evening in the hotel and it will be extended a little later than is usual. The dancing usually stops at 10 o'clock, but it will be extended a little later for any of those who care to dance.

On the Pinehurst estate they have a very splendid dairy. It went down on the program as a model dairy, but I notice the word "model" was blue penciled by those in authority, and it was let go with the word "dairy." They have some registered Ayrshire cows. They are not very common in North Carolina. It is worth going to see how they handle the milk. It is one of the best dairies in the State.

Hard by the dairy are the Berkshire pens, and the Berkshires are considered the best that you can buy, as shown by the large number of prizes they have taken in the last few years.

The racing stable is down the way, also, and on tomorrow at 3 o'clock there will be some horse racing down there and the badge of membership will admit you. The horse racing—like everything else at Pinehurst—is the best.

Motion that the privileges of the floor be extended to the guests. Motion seconded; carried.

SCIENTIFIC PAPERS

SECTION ON DISEASES OF CHILDREN

SECTION ON THE PRACTICE OF MEDICINE

SECTION ON PUBLIC HEALTH AND EDUCATION

SECTION ON ANATOMY

SECTION ON PATHOLOGY AND BACTERIOLOGY

SECTION ON SURGERY

SECTION ON GYNECOLOGY

SECTION ON MATERIA MEDICA AND THERAPEUTICS

SECTION ON EYE, EAR, NOSE AND THROAT

DISEASES OF CHILDREN

DISEASES THAT CAN WITH ASSURANCE BE REFERRED TO ABSENCE OF, OR DERANGEMENT WITH FUNCTION OF, THE DUCTLESS GLANDS

Aldert Smedes Root, B.S., M.D., Raleigh

A considerable number of morbid conditions have, in recent years, been ascribed to the absence of, or derangement with function of, the ductless glands. Most of these morbid states are of obscure origin and the diagnosis without much or any, scientific justification. And yet, the inclination of the medical profession to treat these disorders with various glandular preparations, is constantly growing.

These are frequently administered because a definite diagnosis has not been arrived at, and with the hope of their being effective. The various proprietary preparations of these glands have been exploited by wide advertisement, and the pseudo-scientific claims set forth for them, might appeal strongly to the less thoughtful physician. But how far have we gone in our knowledge of the physiological function of these glands? What disorders are really due to a derangement with their function or to their absence in so far as we know? Let us come to a conclusion by considering each gland separately.

The Pineal Gland. It has been taught by Marburg and others, that a tumor of this gland—causing a hypo-secretion, resulted in precocity of sexual development and a hypertrophic condition of the genitals. Undoubtedly, a small number of such cases with necropsies made, have been observed, but as the large majority of the seventy cases of pineal tumors collected show no sexual precocity or abnormalities of the sexual organs, we cannot attribute this abnormality to a derangement with function of this gland. The removal of the pineal gland has been performed in various lower animals with very indefinite and inconclusive results. It can be said that the experimental work upon this gland thus far has failed to show that it possesses a function.

Pituitary Gland. Tumors of, or near the pituitary, giving a decrease in the secretion of the gland, may give rise to a group of symptoms known as Fröhlich's syndrome—delayed sexual development, adiposity, increased sugar tolerance and often mental dullness.

The feeding experiment of Goetsch[1] upon white rats, showed that when the whole gland is fed, the animals grew more rapidly and the nipples of the female became more rapidly developed. The ovaries, tubes and cornu of the uteri were larger than those of the controls. In the males, there was a more rapid growth of the testes, and early spermatogenesis took place before the testes of the controls were matured.

Anterior lobe feedings showed increased weight, greater body growth and greater sexual development, while posterior lobe feedings had no effect upon sexual development. These experiments seemed to substantiate the fact that Fröhlich's disease is due to a hypo-secretion of the anterior lobe of the pituitary gland.

There have been too few of these cases treated to come to a conclusion that the administration of pituitary gland has an effect upon this condition. Haynes[2] seemed to have obtained results with organotherapy in his case of pituitary disease. Of recent years, diabetes insipidus has been attributed to lesions of the pituitary, and numerous reports have appeared, where the administration of hypophyseal extract has shown good results. Such cases have been reported by Grondahl,[3] Hoppe-Seyler,[4] Groul,[5] and Metzfeldt.[6]

Necropsies in cases of diabetes insipidus, however, have sometimes failed to show any lesion at all, and also tumors affecting this gland have been found which have not caused symptoms of this disease. While we do not know the etiological factors producing it, and there are probably several, the administration of the hypophyseal extract would be justifiable in the light of the cases which have been cited as improved by this treatment.

Adrenal Gland. Interference with function of the adrenal gland by the pressure of a cortical tumor, may be associated with an abnormal state in which there is precocious sexual development associated with over-development, and at times with mental dullness. Jump, Beates & Babcock[7] have collected seventeen of such cases—all confirmed by necropsy. Other cases have been reported by Baldwin and Van du Bergh.[8]

Parathyroid Glands. Escherich attempted to show that either a lesion of, or a functional disturbance of the parathyroids, affecting calcium metabolism, was responsible for tetany, but this has not been established with assurance, since the hemorrhagic condition of the glands which he describes as occurring in tetany, may be found in children who have never had this disease, and again, hemorrhages may be found where there has been no tetany.

Thymus Gland. An increased secretion of the thymus gland has been held responsible for cases of status lymphaticus by some writers, but there is little or no evidence directly or indirectly to substantiate this hypothesis.

This brings us to a discussion of the *thyroid gland.* Here we know beyond peradventure that an absence of or derangement with function of this gland, causes definite diseases—on the one hand myxodematous states where there is deficient thyroid secretion and on the other, exoph-

thalmic goitre and hyperthyroidism, where there is hyperactivity of the gland.

Myxodema in children, when due to a congenital absence of thyroid, is termed sporadic cretinism and when due to extrauterine causes—the symptoms appearing at a later age—is termed late infantile myxodema.

In the latter case, it is difficult to tell what the injurious influences are which operate to destroy the thyroid. It occasionally occurs after an acute infectious disease, and in certain geographical localities, where goitre and cretinism have occurred for several generations, late infantile myxodema is endemic. It is in these localities that are found the so-called "goitre-springs."

The symptoms of late infantile myxodema differ from those of sporadic cretinism only in degree and time of development—in the former appearing not until the second or third year or later, and the symptoms less marked. The influence of heredity upon the congenital absence of the thyroid does not seem to play a role and usually one child in a family is affected, though there are exceptions as in Herrman's [9, 10] three cases in each of two families.

A well-developed case of cretinism is so destructive that I scarce need dwell at length upon the clinical picture. The general dwarfism of the whole body, the gelatinous feeling of the dry, harsh, sallow skin, the large head set upon a short neck, the shapeless shortened limbs and absence of body lines, the pudgy hands and feet, the repulsive face with thickened eyelids and lips and protruding tongue, the distended abdomen always with an umbilical hernia, the mental torpor, together give the diagnosis at the first casual glance.

It is not such self-evident cases as these that the physician's skill is called into play, and in which the best results of treatment are obtained, for mental, and to less extent physical development is contingent upon the earliness with which the disease is dealt with—before the typical symptomatology will have made the affliction grossly apparent.

Defective mentality is probably entirely relieved in sporadic cretinism, but the mental states of these unfortunates are made to approach the normal only by early specific organotherapy. It is therefore the recognition of this disease when its first symptoms appear, that should more concern us.

The earliest symptoms are manifested usually at the age of four to six months—earlier to the close observer, and earlier in bottle fed babies. They consist of mental and physical apathy, and failure to grow in length. Shortly afterwards follows the development of cretinoid facies, and changes in the character of skin and mucous membranes.

In a child of six or seven months of age, backward mentality, ex-

hibited by inability to hold up its head or sit alone without support and by lack of interest in its surroundings, physical inertia, as shown by the passiveness and nonresistance to physical examination and handling, the failure to grow in length as determined by measurements compared with those of a normal child of the same age, should suggest the possibility of cretinism, and place us on guard for the development of the more characteristic symptoms, soon to appear. In this early stage cretinism is sometimes distinguished from Mongolian idiocy with difficulty. In the latter, the Mongol slant of the eyes, the less placid demeanor, the proper proportions existing between the length of the limbs and body, usually gives the diagnosis. If there is doubt, thyroid gland should be administered.

The preparation usually used, is the dry powered gland of a sheep called thyroid extract. One half grain is given by mouth and the dose gradually increased from one to five grains daily.

This must be continued throughout the life of the patient—else relapses will surely follow. Under the influence of thyroid administration a striking transformation soon takes place; even where the disease has progressed to the point of producing the picture of typical cretinism. The skin loses its boggy thickening and becomes soft and flexible, muscular power is so increased that the child soon learns to walk, the bony framework of the body takes on a marked development, there is a rapid increase in height, and the idiotic expression entirely disappears. A number of these children can attend school, though usually found in the lower or subnormal grades, and many can be taught useful occupations. The extent of this usefulness must depend upon how early they receive treatment.

Hyperthyroidism. This may be associated with hyperemia of the thyroid gland, or due to Graves's disease. The first condition is a very common one, being found in girls about the time of puberty. The symptoms are an enlarged thyroid gland, restlessness, irritability, nervousness, cardiac palpitation, and anemia. As a rule, the symptoms gradually disappear when menstruation will have been established.

True exophthalmic goitre in young children is very rare. Holt[11] mentions a case of five and one-half years of age. The prognosis in children is more favorable than in adults.

SUMMARY AND CONCLUSIONS

1. The only diseases which can, with assurance, be attributed to an absence of, or derangement with function of, the ductless glands are those referable to the thyroid *i. e.* myxodema, hyperthyroidism and exophthalmic goitre.

2. There is some evidence, through scientific experimentation, to support the view that Fröhlich's syndrome is due to a derangement with function of the pituitary gland.

3. The clinical evidence in favor of giving pituitary gland in cases of diabetes insipidus is sufficient to warrant its administration.

4. Prescribing preparation of the endocrine glands for obscure disorders, cannot be too strongly condemned.

5. A plea is made for the early recognition of cretinism, in order that the best end results may be obtained from early thyroid treatment.

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NOTE.—Liberty was taken of using some of the references appearing in E. A. Park's *Review of the Literature of the Past Two Years on the Organs of Internal Secretion.* 1916 Am. Jour. Dis. of Ch., Vol. XII, No. V, 478.

DISCUSSION

DR. R. H. LAFFERTY, Charlotte: This is rather deep water in which we find ourselves. The doctor in this paper has summarized practically everything we know in regard to the subject. The thyroid is the only one of the glands to which we can with certainty attach a definite disease. Some of the other glands we have ideas about, but we are hardly cer-

tain. It is very natural that the internist should blame some of these internal glands when he meets some very obscure case that shows derangement of various organs and that cannot be traced to some other cause.

In that splendid book of Sajous on the Internal Secretions there is recorded a great deal of experiment and there is a great deal of theory, but when you cull it and work it down to facts you have just about what the doctor has said, viz: that we are only sure of the thyroid. Dr. Ott of Philadelphia, has done a great deal of work along the experimental side of this, and Falta, in his experimental work upon these important organs, has formulated the laws of the pluriglandular action, showing the relation between the different glands. The synergistic and antagonistic actions of many of these glands are very striking and interesting, but as we said when it is all boiled down we have nothing much from a practical point of view but theory; yet it is a very fruitful field for research and it is something that we hope to learn more of as the days go by.

Dr. E. J. Wood, Wilmington: The helpful thing in Dr. Root's paper seems to me to be the fact that he brings to our attention the possibility of cretinism. If we had in mind always that there was such a thing as cretinism a great many cases in this State could be early diagnosed and early cured. It is not so much what we know but how orderly we have it arranged in our heads. I think that there are very many ignorant men more successful than the learned men because they have a few well selected points all ready for actual use, and that seems to me to be the importance of papers of this sort.

Another thing I want to mention is the failure of any standardization of the various preparations for the thyroid gland. I want to know what effect one grain of the various manufacturers' preparations bears in relation to another. I have absolutely no knowledge of how much to begin with because I do not know when any two of these preparations are the same. A doctor carried his own child to Dr. Osler for a diagnosis. The latter asked the doctor if he had ever heard of cretinism. He said, "No, he did not have time for any such theoretical stuff as that, as he was a practical man!"

I do not know whether Dr. Root mentioned it, but we have had occasion to feel that subnormal temperature is a help in the diagnosis of cretinism.

Dr. H. D. Stewart, Monroe: It seems that the normal thyroid gland is a very valuable asset to any individual. It presides over the nervous system and the nervous system presides over the whole system. Anybody

with an abnormal thyroid gland is diseased one way or the other; he is too nervous or he is not nervous enough. It is said that there are two general causes of idiocy. One is premature hardening of the bones of the skull, not allowing the brain to develop properly, and another is a prolonged softening of the bones of the skull. Instead of having the cocoanut head or the watermelon head on the one hand, with the premature hardening, with the prolonged softening we have the pumpkin head and the balloon head—both heads of idiots, or of low grade defectives. I think the thyroid gland has a great deal to do with both of these conditions. I believe the reason the thyroid gland is diseased is because some ancestor, usually on the male side, not always, has had syphilis or chronic alcoholism so there has been idiocy or mental defect in the family before. Idiocy comes from three causes—from defective ancestry, from alcoholism or from syphilis. It is my opinion, though I have no scientific basis for the thought, that it happens that these things affect the thyroid gland and cause an abnormal thyroid. One other sign of low mentality is the protruding tongue, and slobbering. If you see an individual slobbering, with his tongue protruding, you can put it down he is a person of low, confused mentality.

Dr. A. S. Root, Raleigh: As to Dr. Wood's point, subnormal temperature, I inadvertently left that from my paper. I should have mentioned that, and also the fact that metabolism of these cretins is on a lower plane than metabolism of the normal child of the same age. Dr. Fritz Talbot of Boston has studied the energy metabolism of several cretins. One of these, three years old, had a lower metabolism than a normal infant eight months old.

One point I emphasized, which I am going to emphasize again, is the fact that there is a tendency on the part of the medical profession to use indiscriminately these glandular extracts, which are advertised so attractively, and I think it is very unscientific to use them with the hope that you might do some good, not having an accurate idea of what the trouble is.

SUDDEN DEATH IN INFANCY.

L. W. Elias, M.D., Asheville

Tragic is the death of a little baby, always. But doubly tragic is the occurrence when the baby dies suddenly. Following the first pathetic lamentations come a flood of questions as to the cause. The family are harrassed with the fear that there may have been foul play, or a possible

neglect somewhere on their part. The doctor is often hard pressed to explain the cause of the death. If he is able to absolve every one from intentional or unintentional responsibility, he is still besieged with countless inquiries, for the human mind hates mystery without a key. And yet there are few things in medicine where the doctor is left more entirely to guess work than in just such cases as these. In the first place the history of the case is usually meagre and unreliable, there had been no thought of trouble in the parents' minds, hence no special ante mortem observations of the case; or else the child was found dead, and there is no history beyond the fact that it seemed perfectly well when it went to sleep or was left playing in its bed. So that, short of an autopsy, and often even with one, the doctor is left almost entirely to conjecture in these cases.

While this is true, it is quite worth while to consider briefly, some of the most frequent of the many possible causes of sudden death in infancy. In the first place, the child may have been, as it seemed, entirely well prior to its death. In this case the mother may have lain upon it, usually when intoxicated. This is naturally an infrequent cause.

Then, the child may have been well, so far as a previous examination would have shown, when suddenly a collapse occurred, and in a few hours the baby was dead from meningeal hemorrhage or hemorrhage into the peritoneal cavity. Or further still, there may have been some malformation of kidney, heart, lungs or intestinal tract or a diaphragmatic hernia, and from one of these, in the first few days of life, the baby may have died. It is needless to say that most malformations which are sufficient to cause death are readily detected by examination. This may not be said regarding thymus enlargement. Here a most careful examination during life, including X-Ray, and with a full consideration of all symptoms, may still leave us unable to say definitely that a status lymphaticus exists. Yet of all the underlying causes of sudden death in minor operations, at times as insignificant as the puncture of a hypodermic needle, nothing is more frequently responsible than is this condition. This condition again becomes responsible for many of the deaths from anesthetics, light attacks of bronchitis, broncho-pneumonia, etc. Let us remember thymic enlargement as one of the frequent causes of death where no cause for death was suspected. But this must not lead us to carelessly assume that all obscure deaths are of thymic origin, and fail studiously to consider the other possible causes.

Vomiting, and then aspirating the food into the larynx is occasionally responsible for the death of a small baby, most apt to occur during sleep, in a frail baby, under six months of age. Lying on the back at the time of vomiting favors this occurrence. Under such circum-

stances, the baby will probably be found dead in its crib and only a careful autopsy will reveal the cause of death.

Convulsions may cause death at times in previously healthy children, but this occurs most often in rachitic babies. In this connection may also be mentioned spasm of the glottis.

A seemingly well baby may become profoundly prostrated, the temperature going up rapidly to 106 or 107, followed by death in a few hours, at times with convulsions. The cause here is usually some form of acute septicemia. Occasionally malignant scarlet fever or pneumonia may be the cause, but there are various types of the infectious agent.

And now let us consider a class of cases where it was known before that the patient was not well, but he was considered in no immediate danger. Marasmic babies furnish a large number of sudden deaths, with or without some apparent exciting cause. Those in institutions are the ones coming to such an end most frequently. Many are found dead in bed in the morning, others dying after two or three hours illness, without any symptoms except the impaired nutrition of weeks standing. In some of these cases the simple lowering of the temperature seems to be sufficient exciting cause to decide a rapidly fatal termination. At autopsy an atelectasis may be found, as in the case of sudden death in very young infants. But in many cases autopsy reveals nothing at all. In every case of sudden death in poorly nourished or rachitic children, the condition itself must always be thought of, as the underlying if not exciting cause, and the vast majority of all sudden deaths in infants, regardless of what the immediate cause is, occurs in babies suffering in greater or less degree from marasmus.

In older babies and young children, sudden death may occur from an entirely different class of causes. Here an unsuspected retropharyngeal abscess, or abscess from caries of the spine, or the presence of tubercular glands may cause death by pressure either on the pneumogastric nerve or against the larynx, still further by ulceration and rupture of these abscesses or tubercular cheesy masses into the air passage death may result. A still further cause, of somewhat similar nature, is dislocation of an upper cervical vertebra in Potts's disease.

The foregoing is a very sketchy outline of the usual causes of sudden death in infancy.

In conclusion, let me mention again that marasmus underlies the majority of sudden deaths in infancy. Remembering this fact may not only be of some assistance in arriving at a diagnosis, but the proper emphasis upon this point should result in diminishing the number of deaths in infancy.

DISCUSSION

Dr. A. McNiel Blair, Southern Pines: It was with pleasure and profit that I listened to Dr. Elias's paper. One thought struck me most forcibly, the importance of the role of the thymus gland as a cause of sudden death in children, because of certain personal experiences. A case presents itself to my mind of a child between three and four years of age showing definite symptoms of asthma during the course of a slight cold. There was little doubt in my mind of this particular case being one of thymic asthma, but the parents refused a request for a radiogram of the chest which would have suggested at least the true character of the asthma.

Retropharyngeal abscess and acidosis also suggest themselves as being reasonable causes of sudden death in infancy.

I was much impressed by the amount of work necessarily entailed in the preparation of Dr. Elias's paper and of its logical arrangement.

Dr. T. E. Anderson, Statesville: The gentleman who read the paper did not consider any possible heart defects as a factor in sudden death of children. It seems to me I have seen cases where it might have been referred to a heart trouble of some kind. Of course, blue babies would exhibit at once trouble in this direction, but I have seen a few cases where I thought a defect of the heart might have stood in relation to death. I do not think the gentleman considered that at all in his paper. I think that the heart should be reckoned with as a factor in sudden death in some of these cases. In a somewhat recent case of mine I thought death was due to heart lesion.

Dr. H. D. Stewart, Monroe: He did not consider Mrs. Winslow's soothing syrup or any of those opiates with which mothers dose their babies while they are gone to the club.

Dr. E. J. Wood, Wilmington: There is one cause of sudden death I would like to bring to the attention of the society, and that is the sudden death that occurs in pellagra. I have seen so many cases that I think it ought to be mentioned and I would like to add that nobody has ever explained the occurrence.

Dr. J. Buren Sidbury, Wilmington: Within the last year I have had three cases of catarrhal laryngitis or so called simple croup two of which died. The onset in all of these cases was more or less sudden and the throat cultures were repeatedly negative for diphtheria in all of them.

The first child was two and one-half years old and an exceptionally robust child. He was taken with the croup one Thursday night and he had a very hard night. I saw him the following morning about 6

o'clock and found him fighting for breath, though he was not blue and at times would seem to be much relieved and would breathe very easily. I decided to wait a while before intubating him since he had had a very light case of the croup the night before and was all right during the day following. I saw him five hours later and he showed signs of exhaustion and his breathing was no better and I intubated him which gave him instant relief, but the relief was not as marked as I had seen in known cases of membranous laryngitis which I had intubated before. His temperature was never more than 101 p. r., and that only just before he died. Ten hours after intubating him he was given 5,000 units of antitoxin although he had a negative throat culture. Sunday noon, two days later, I extubated him and he seemed to be in very good condition. Four hours later I received a hurry call to see him and he died before they could finish telephoning, and the death was not that of a plugging of the larynx according to the description, but was without any respiratory effort.

Another child about the same age, from a camp town had to be intubated at noon because it was impossible to get to him earlier. He had had a sudden onset of croup the night before and struggled desperately all night and all the following day until I could get to him to intubate him. He showed two negative throat cultures, was extubated on the third day but the tube had to be put back in a few hours. On the fourth day with the tube in he became blue and had labored respirations so the tube was removed and he died in a few minutes. He did not get antitoxin.

The third case about the same age and the same clinical symptoms, with repeated negative cultures, was not given antitoxin but was intubated and extubated a number of times, one time after extubating he all but died, became black and ceased breathing for a few minutes. He was intubated again and artificial respiration brought him around.

Of these cases, two died one having received antitoxin. All three cases gave a negative throat culture for diphtheria. One case not having antitoxin recovered. In the future, all suspicious cases of croup which persist croupy in the daytime will get antitoxin whether they have a positive or negative throat culture. And in such cases I believe that the intra-venous route should be used for we should neutralize the free toxins in the blood at the earliest possible moment.

Dr. Zenas Fearing, Elizabeth City: I think if inquiry into parental history of infants dying suddenly it would be found that either one parent or the other were chronic rheumatics. Infants born of parents with this trouble no doubt could easily inherit this condition causing serious heart lesions which would lead to sudden death.

Dr. A. McNiel Blair, Southern Pines: I would like to ask Dr. Elias what relation does acidosis bear to this?

Dr. L. W. Elias, Asheville: I appreciate very much the good discussions and the points that were brought out, especially that of Dr. Wood.

As to the relation of acidosis to sudden death I do not know. I had a case of acidosis a few months ago, sick for forty-eight hours, was making rapid recovery, I thought, suddenly went to bed and in a half hour was dead. I am inclined to think the relation was not very intimate. Other than that I know nothing.

There is just one point I would like to emphasize, and stress this as a most important thing, and that is autopsies. I think we are all inclined to conjecture and give the family whatever little information comes to our minds, and pass the thing over. The child is dead and that is the end of it. If we want to enlarge our information there is no means as valuable as an autopsy. It is surprising the ease with which we can get an autopsy compared with what one would think. That has been the surprising thing in the last few years to me, and I have made up my mind that I will clear my conscience by asking for an autopsy on every occasion. If they refuse then I am clear. One very intelligent man said the other day, "You cannot do anything worse than nature, so if you want to make an examination go ahead." The mother said the next day that she thought at the time only of what it might do for other children, never realizing the comfort it would be to her. I would like to stress that one point. Get all the autopsies you can. You will find the people will grant them more often than you realize if you will only ask.

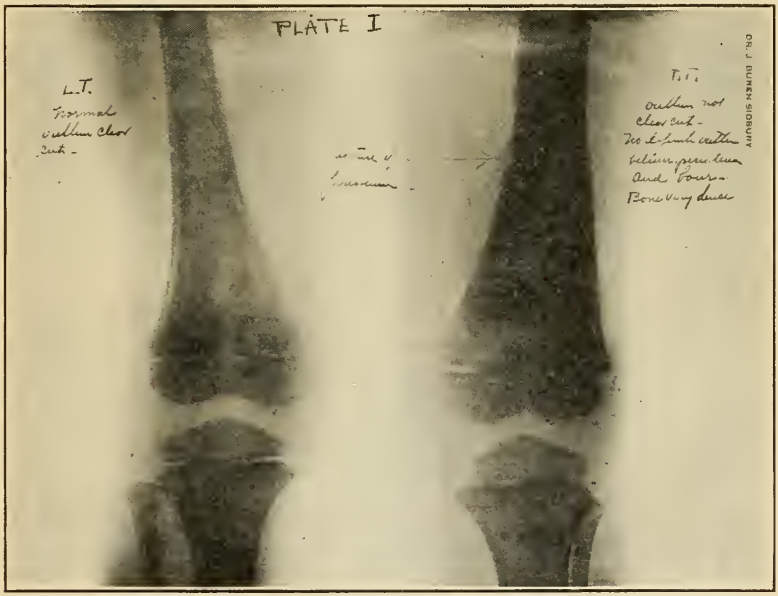
CONGENITAL SYPHILIS

J. Buren Sidbury, A.M., M.D.
Attending Pediatrist to Marion Sprunt Memorial Hospital, Wilmington.

In the beginning, I wish to call your attention to the subject of this paper, congenital syphilis, in contradistinction to hereditary syphilis. As I see it, congenital syphilis is not transmitted as a hereditary characteristic; that is, it does not depend upon the chromesomes of the uniting germ-cells, but, rather it is an infection transmitted to the fetus in the course or progress of its development. This infection may be accomplished by the spirocheta pallida accompanying the sperm-cell, by means of which the mother becomes infected, or by spirochetae from the

mother who has been previously infected. In other words, neither the sperm-cell nor the ovum has the ability or the characteristic *per se* to develop into or produce congenital syphilis, but rather, it is an infection which occurs during the course of development of the embryo or fetus. It would not be possible for these same two cells to develop into a case of congenital syphilis if they could be placed, after fertilization, on non-syphilitic soil, which, to my mind, determines whether it should be called hereditary or congenital syphilis.

Etiology and Mode of Transmission. The specific organism which causes syphilis was discovered by Schaudin in 1905, and was called spirocheta pallida by him. The organism is a delicate spiral or cork-



CASE 1. Age six and one-half years. C. C. swelling and pain in right knee and right thigh. Left clear cut. Right thickened and diseased.

screw-like organism with a length of 4 to 14 micromes and with a varying number of turns from 4 to 14. It is motile and attached to either end are a number of fine flagella.

Syphilis is always transmitted from a person already infected, and the transmission may take place before, during, or after birth. When the infection takes place before or during birth, it is called congenital syphilis. When the infection occurs after birth it is called acquired syphilis. What happens with these cases is this, the mother is infected before, during, or after conception, and the spirocheta which are set free in her blood, enter the placenta and there set up a specific lesion

by means of which the fetal circulation becomes infected. Fordyce[1] says that the syphilitic fetus is infected through the mother, and that the later the stage of the disease in the mother, the greater chance the fetus has of escaping infection. He thinks that the spirochetae pass from the mother's blood into the placenta and then to the fetal circulation. Here it is interesting to note the very common and constant infiltration of the liver and spleen in congenital syphilis[4], and the relatively infrequent occurrence of this condition in acquired syphilis, these two organs being the first organs supplied with blood from the placental circulation.

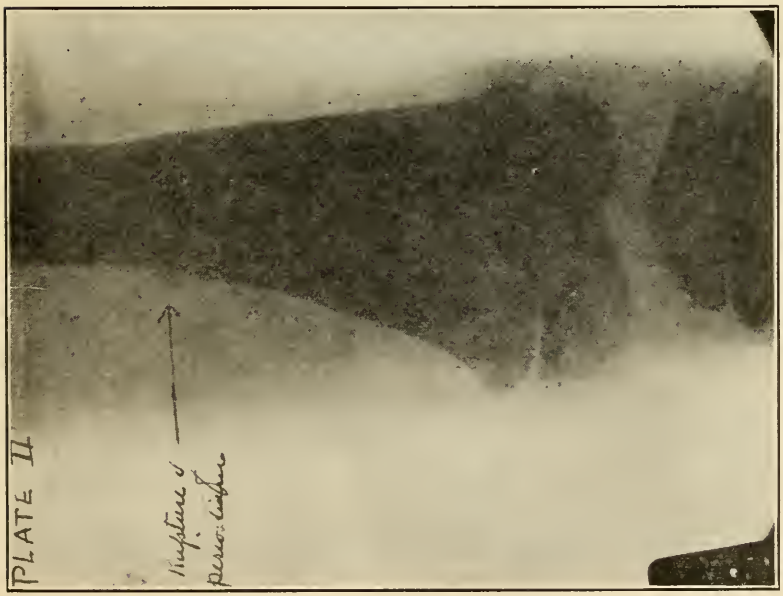
Chiari[3] has called attention to the fact that the liver is the seat of very extensive inflammation and infiltration in more than 90 per cent of infants showing signs of syphilis, which is thought to be proof more or less conclusive that the infection occurs rather late in intra-uterine life.

Syphilis is believed more and more now to be transmitted by and from the mother, and not by paternal germination. "The evidence that without exception all children with hereditary lues are infected *ex matre* and by the placental route stands fast and is not to be confuted; and the possibility of a paternal origin must be regarded with greater incredulity than before," says A. C. Soper, Jr.[4]

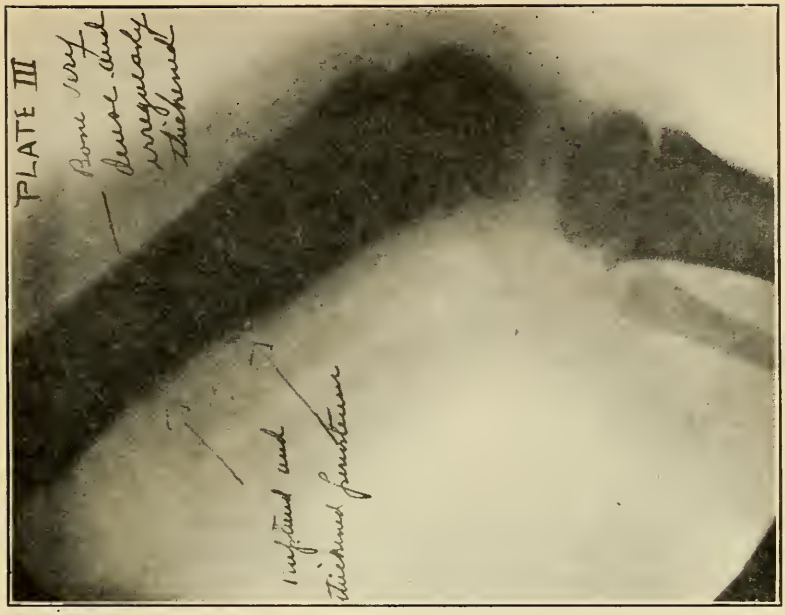
MacCallum[5] says: "In practically all of these cases the placenta is the seat of syphilitic degeneration. There are found diffuse infiltration of the placenta with wandering cells, vascular changes, both in the placenta and in the umbilical cord, distinguished as elsewhere, by thickening of the adventitia and intima, and also curious modifications of the villi, consisting of new formation or loose connective tissue about the central blood vessel. In these cases a striking disproportion between the size of the placenta and that of the child is always seen and is strongly suggestive of syphilis."

Holt[6] says if both parents are syphilitic the child is usually but not invariably syphilitic: that the likelihood of the transmission to the child depends upon the stage of the disease in the parents, that if the mother has a secondary syphilis the chance of the child's escape is practically *nil.* He also says: "If active treatment has been employed for several months, if the child is born at a period when no active symptoms are present, or if the symptoms are a tertiary character the offspring will probably escape."

In 1837 Colles said: "A new-born child affected with inherited syphilis, even although it may have symptoms in the mouth, never causes ulceration of the breast which it sucks if it be the mother who sucks it, although continuing capable of infecting a strange nurse." This had made us think that the mother was immune to syphilis, but with the



CASE 1. Shows rupture of periosteum, worm-eaten appearance of the bone. The bone showing thickening.



CASE 1. Lateral view of same bone, showing irregular thickening and breaks in the periosteum.

advent of the Wassermann reaction and other laboratory methods we no longer consider the mother nonsyphilitic, but rather have proven her to be syphilitic. This mother cannot be inoculated by her syphilitic infant or artificially, though a healthy wet-nurse will be infected by this same syphilitic infant.

Holt[6] says: "There can be no doubt that in the vast majority of these cases the infection of the child is from the mother." It is thought that transmission to the fetus is much less likely to occur if the infection of the mother occurs after the seventh month, though even then there can be no certainty that the child will escape.

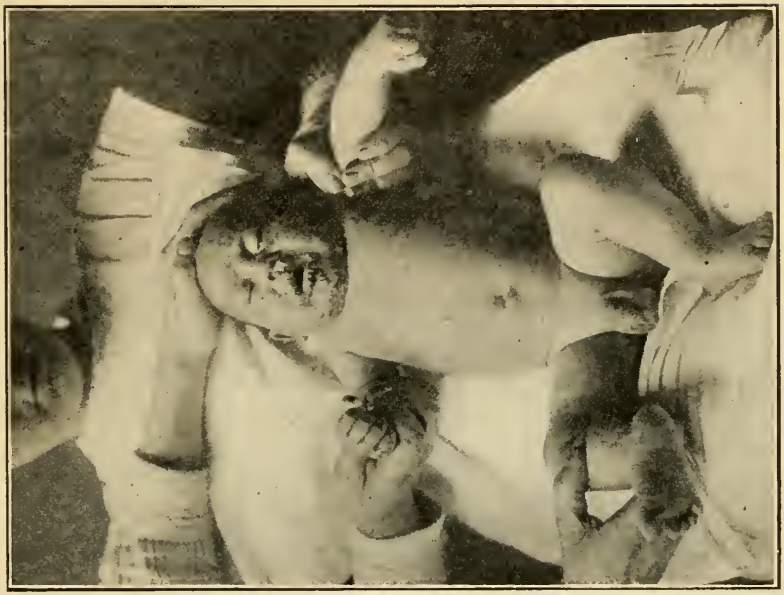
Soldin and Lesser[7] maintain that if the mother shows a positive blood Wassermann this is sufficient evidence that the child has the infection even though he shows neither clinical signs nor a positive Wassermann.

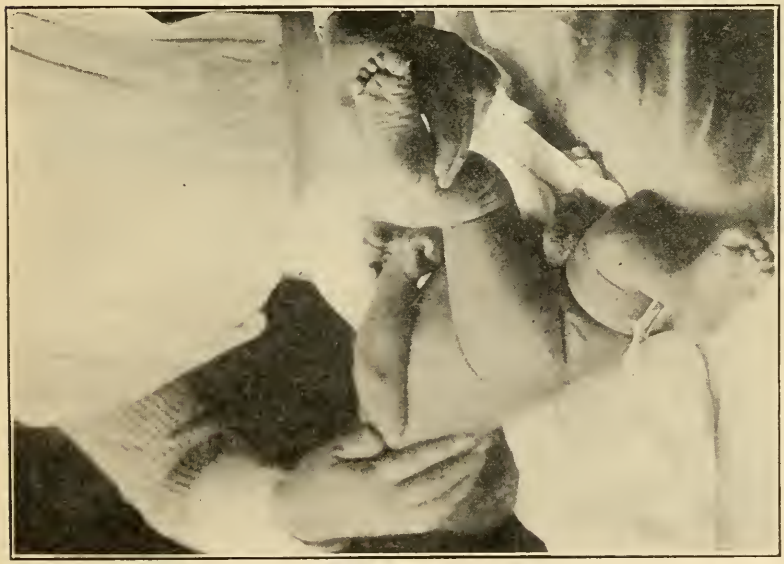
Trinchose[8] says:

1. It is impossible for the fetus to immunize the mother (Colles's law). Paternal infection of the fetus, alone, does not exist.
2. The mother may have a positive Wassermann and the fetal tissues may abound in spirochetes, and yet the fetal reaction may be negative, because the fetus builds no reaction substance until its eighth month. After the eighth month the fetal blood begins for the first time to respond positively.
3. If infection occurs in the last weeks of gestation, the infant may possess neither clinical symptoms nor a positive serum reaction, time period has been too short. Such cases were once considered immune. In fact they are the cases in which the latent manifestations of inherited disease develop.
4. Fruhwald's experimental inoculation of a syphilitic rabbit's testicle indicates that the blood of a syphilitic mother, without either visible signs or a positive Wassermann reaction, may, nevertheless, be infectious.

Pathology. I shall not try to describe in detail the pathology of syphilis for the time and space will not permit, but, rather, I shall try to describe briefly the most common and most typical changes of congenital syphilis. We well know that every organ in the body is infected by this infection and pathological changes occur in all, but only those more commonly seen in this condition will I mention.

In this infection, as in any infection, we have wide limitations. We may have lesions so typical of syphilis that only the naked eye is needed for an unquestioned diagnosis. On the other hand, we may have an infection which has produced so little change that only special staining methods can convince us that there is anything wrong. This is very well illustrated in the section of the spleen which I wish to show you today. You will note that with the ordinary hematoxalin eosin stained section it would be impossible to make any pathological diagnosis except probably some degree of hyperplasia. But with the Levanditi stain of this same spleen we see a section which is absolutely teeming with spirocheta





CASE 2. Age, three months. Syphilitic rash on face, palms, soles, scrotum, penis, and buttocks. Unable to nurse on admission. Ten days after giving Gray pulv. and mercurial inunctions, rash entirely disappeared and steadily gained in weight for the four weeks in hospital. Artificially fed.

pallida. This laboratory method with the Wassermann reaction has dealt the death knell to both Colles's and Profeta's Law. That is, that it is not necessary to have clinical signs of syphilis to have syphilis.

The pathological changes seen in the still-born infant in the first half of pregnancy, in the early months are not typical of the disease, though when the infection occurs in the latter half of pregnancy when we get a child born alive, or born dead, but well developed for the period of gestation, we find more or less typical changes. And these changes Dunn classifies into two fundamental processes:

1. Diffuse cellular infiltration.
2. Inhibition of development.

This diffuse cellular infiltration is most commonly seen in the visceral organs, the spleen, liver, kidneys, and lungs most frequently. Also the epiphyseal ends of the bones are very commonly affected. The origin of this infiltration is in the interstitial tissues surrounding the small blood vessels, and the most favored location for the spirochetae is the perivascular tissues.

MacCallum[5] says: "There are found diffuse infiltrations of the placenta with wandering cells, vascular changes both in the placenta and in the umbilical cord, distinguished, as elsewhere, by thickening or adventitia and intima, and, thirdly, curious modifications of the villi, consisting of new formation of loose connective tissue about the central blood vessels, such as to cause a great bulbous swelling of each villus and hence a marked enlargement of the placenta. On this account, a striking disproportion between the size of the placenta and that of the child is always suggestive of syphilis."

The most constant pathological finding in this condition, with the exception of the enlarged spleen, is the epiphysitis of the long bones. Holt says there is practically always an epiphyseal osteochondritis and he describes two varieties: "In one there is an inhibition of bone formation around the columns of calcified cartilage, through the destruction of cartilage cells by the vessel loops and the formation of bone-marrow goes on unchecked and in a normal manner. In the other, there is in addition to the delay in bone formation the development of granulation tissue that springs from the cartilage canals and that grows between the shaft and the epiphysis and, perforating the columns of cartilage cells invades the epiphysis."

According to MacCallum[5] the epiphyseal line, which usually appears as an even thin, pearly gray line between the cartilage and bone, has a very different appearance, that of a jagged, thick, yellowish-white, opaque outline. "Instead of being a delicate line of contact it becomes an area of separation filled with a yellowish gritty substance. . . . .

Sometimes the epiphysis is quite dislocated and separated from the bone along this line."

MacCallum further says: "Although the bone is soon involved, these are essentially affections of the periosteum, which is torn from the bone by an inflammatory infiltration composed chiefly of mononuclear wandering cells. . . . It is this process which gives origin to many of the thickenings with rough, irregular surface which one finds so commonly on the shaft of the long bones . . . the shaft of the bone becomes dense and ivory-like and the whole bone is much heavier than normal

CASE 3. X-Ray photograph of case of syphilitic dactilitis eight months after outset of treament, which has been irregular and intermittent. The proximal index phalanx still shows thickening.

. . . there is presented a peculiar worm-eaten appearance." This X-Ray in Case 1 well illustrates all of these points described by MacCullum.

Lungs. The lungs are usually enlarged and heavy, showing areas of patchy consolidation. "Microscopically, there is a great thickening of the alveolar septae with some desquamation of the epithelium and in places an infiltration with leucocytes and mononuclear wandering cells. . . . The connective tissue of the lung is enormously increased in bulk about the vessels and bronchi and in the alveolar walls themselves. These are so thick that the alveoli look like glandular spaces in a solid tissue; the capillaries are wide and seem very abundant as they run from

side to side of the septae," says MacCallum. This condition from its microscopic appearance is called Pneumonia Alba.

Lomer[9] examined 43 fetuses, all of which died before the thirtieth week of pregnancy. He found the spleen and liver enlarged in all, and marked bone changes in 21. Berch-Herchfold examined 108 new-born syphilitic infants; he found the spleen enlarged in all, typical bone changes in 35, but in many cases he found the bones normal, though later writers have found the bones in a much larger proportion of cases.

Pancreas. Though rarely found to be infected in acquired syphilis is commonly affected in congenital syphilis and is found slightly enlarged, gray and firm.

Frequency. Epstein[10] found 33 per cent positive Wassermann reactions in 236 new-born infants, while 10 per cent of their mothers gave a positive serum reaction. Holt[11] found 6 per cent positive Wassermann reactions in 178 hospital children. Elliott[12] (Glasgow) found positive Wasserman in 10.8 per cent of 130 children. Jeans and Butler[13] studying 5,183 new patients in dispensary found only 2 per cent showing syphilis clinically. Churchill[14] studied 695 cases, 1 to 12 years unselected, and 3.3 per cent showed evidence of syphilis. Congenital syphilis in the four largest cities, New York, Chicago, San Francisco, and St. Louis[14], appears from evidence obtainable to be between 2 and 6 per cent of all cases studied.

During the past year there were 100 new cases treated at the clinic in Wilmington and out of that number 8 cases showed both clinical symptoms and a positive Wassermann reaction. One case showed a triple positive on both the blood serum and spinal fluid. We feel that reports on cases studied more recently are much more accurate than former reports because they are not based on clinical symptoms only, but are based on both clinical symptoms and the Wasserman reaction on both the child and the mother in many cases.

SYMPTOMS

1. Abortion at any period of pregnancy with discharge of a dead macerated fetus, still-born at term, alive prematurely but with feeble vitality and lives only a few hours.

2. Snuffles, which may date from birth, and be so bad as to make nursing impossible and may cause child to starve to death. These infants frequently have their adenoids removed with no relief of symptoms. The most characteristic thing about the snuffles is a persistent and profuse nasal discharge which may or may not be bloody and which resists all ordinary treatment for a cold.

3. Vesicular eruption on the hands and feet. The eruption may be

over entire body, syphilitic pemphigus. May have macule-papular eruption over body just as in adults.

4. Enlarged spleen, not infrequently enlarged liver.

5. Wakefulness, especially at night, which is more or less indicative of bone disease in the infant, the usual spyhilitic nocturnal pain in syphilitic osteochondritis.

6. Peculiar cry, high-pitched and hoarse, or may be very weak and remind you of the cry of a kitten.

7. Swelling of shafts of bones with extreme tenderness. Screams when handled. Syphilis affects shaft, tuberculosis the ends, as a rule.

8. Mucous patches or fissures around the mouth or anus, but no chancre.

9. The heels present a typical shiny red color, resembling ham.

10. Poorly nourished or marasmic child.

11. General adenopathy with marked enlargement of the epitrochlears. The glands are enlarged, noninflammatory, not painful, distinct, and movable.

12. Onychia, alopecia and cranial exostoses.

13. Hutchinson's Triad: Hutchinson's teeth, interstitial Keratitis and deafness. Miller [15] gives the following statistics of the time of beginning of symptoms in 1,000 cases:

Symptoms appeared the first week in	85 cases
Symptoms appeared the second week in	138 cases
Symptoms appeared the third week in	240 cases
Symptoms appeared the fourth week in	177 cases
Symptoms appeared the fifth week in	86 cases
Symptoms appeared the sixth week in	54 cases
Symptoms appeared the seventh week in	50 cases
Symptoms appeared the eighth week in	30 cases
Symptoms appeared after the eighth week in	140 cases

Diagnosis. Until 1905 the diagnosis of syphilis depended necessarily upon symtoms and physical signs. Since then important laboratory methods have been worked out, such as the staining methods which demonstrate the spirocheta pallida, the serum reaction, otherwise known as the Wassermann reaction and the Luetin test. These methods have made the diagnosis more easy and far more certain than was ever possible before.

While the Wassermann reaction has certain limitations which are admitted by all reliable workers, yet Holt says there is probably no modern means of diagnosis of more importance. If we bear in mind certain possibilities of error we are enabled to make a diagnosis certain by

this reaction and in many doubtful and even unsuspected cases the diagnosis is made easy. At present it is thought that latent as well as the active syphilis gives a positive serum reaction, and children who show a positive serum reaction should receive antisyphilitic treatment. Hesse says the Wassermann reaction is positive in two general types of conditions. 1. Protesoa. 2. Scarlatina, tuberculosis, malaria, pernicious anemia, lupus erythematosus, carcinoma and sarcoma. Fordyce says: "A partial or transient complement fixation is sometimes seen in chachetic states, as well as in leprosy and yaws. The weakly positive is valuable for treatment but not for diagnosis."

The Luetin test I shall not describe in detail, but will state that it is an intracutaneous test somewhat like the Von Pirquet test for tuberculosis; only the former is given intracutaneously and the latter is done by scarification of the skin. Within two or three days after the injection of the luetin there is seen a red indurated papule, which slowly increases during the following four or five days, and then subsides, leaving a brown desquamating induration, according to Alan Brown[17], who reports having done 134 tests at the Babies' Hospital, New York. If I may I will quote his conclusions.

1. These observations indicate that the luetin cutaneous reaction is a valuable addition to the means of diagnosis of hereditary syphilis.

2. In the tests made in the hospital the results have corresponded closely with the clinical symptoms and the Wassermann reaction.

3. The luetin test has the obvious advantage that it can be readily applied anywhere by any one and the technique is comparatively simple.

4. The interpretation requires considerable experience, but with this the number of doubtful reactions is small.

Treatment. The treatment of congenital syphilis should begin before the baby is expected to be born if we wish to have a viable child or expect the best results from our treatment. In the Boston Lying-In-Hospital Clinic every pregnant woman is required to have a Wassermann test. All those who show a positive reaction are referred to the Massachusetts General Hospital for active antisyphilitic treatment. Huntington[18] states positively that the percentage of viable children is very much increased, and that very few new-born children of syphilitic mothers show signs of syphilis. Williams [18] and also many others have shown that the greatest single influence in fetal mortality is syphilis. It is estimated that from 25 to 40 per cent of all fetal accidents are due to syphilis alone. This should sufficiently emphasize the importance of thorough physical examination of the mother or pregnant woman including the Wassermann reaction and the earliest possible active maternal antisyphilitic treatment. It is the consensus of opinion that the treat-

ment does the mothers no harm, but are very much benefited, that there are fewer pregnancies terminated by abortion or stillbirth, and that the percentages of viable children are much greater.

The treatment of children differs from adults only in the size of the dose. Mercury and salvarsan are the two drugs used and are specific for the condition when used properly. Here, as in other conditions, treatment should be started as early as possible. Those who have used salvarsan in congenital syphilis admit that immediate and very satisfactory results follow the administration. Salvarsan should be given intravenously if the best effects are expected. Holy's plan in the Baby Hospital has been to give the second dose two weeks after the first, and to repeat the dose from one to two months until two negative Wassermann.

CASE 3. Syphilitic Dactilitis of index fingers. Negro child, four months old.

In giving the salvarsan the quantity of the dose has seemed rather large for these little ones and it has been found that a more concentrated solution not only is not harmful but works equally as well as the original dilution. The dose, .05 gm. to .1 gm., is dissolved in 5 cc. to 10 cc. of sterile freshly distilled water and injected intravenously.

Mercury doses: Gray powder, gr. ½ t. i. d.; bichloride of mercury, gr. $\frac{1}{60}$ t. i. d.; calomel, gr. $\frac{1}{10}$ t. i. d., always diluted well with water.

Salvarsan doses: .05 gm. for very young infants or very small infants; .1 gm. for older or larger infants, 5 to 6 mos., calculated .01 gram for each kilogram of body weight. Do not inject more often than two weeks, repeat four or five times and controlled by two negative Wassermann reactions.

Combined mercury and salvarsan give the best results.

Prognosis. The earlier the occurrence of the lesion the worse the prognosis, and *vice versa.* If mother is treated early in pregnancy prognosis is good.

CASES REPORTED

CASE 1. J. C. B., aged 6½ years, weight, 34 pounds. Admitted to the hospital eight months ago on the surgical service with a very red, swollen, hot, tender right knee, running a temperature of 90 to 103. This acute condition continued about ten days and the boy was discharged from the hospital improved with a diagnosis of tuberculosis of the right knee joint, operation not advised, but general hygienic treatment given. The patient came to my clinic three or four months later, complaining of swelling and pain (mainly at night and when he took too much exercise) in his right knee. The condition had improved very little, if any, since he left the hospital, according to the history.

Past History. Measles when an infant, pertussis when he was three years old. No other illness. Family history negative for tuberculosis; two brothers, one sister, living and well. Patient is the youngest child. Mother had one child born dead, the first pregnancy.

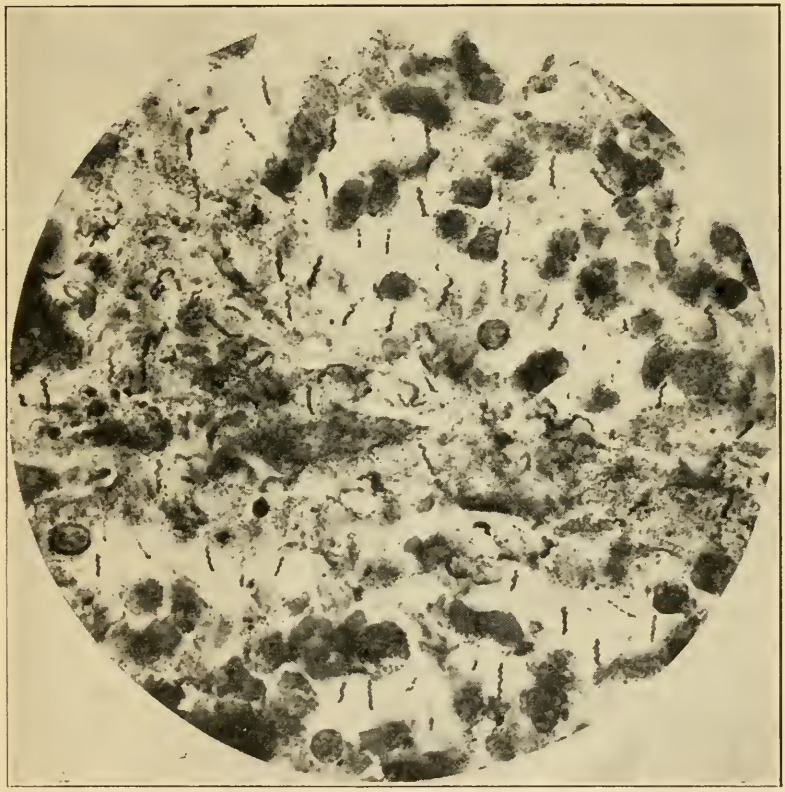
Present Illness. Three months ago had a lick on the right knee and the right knee became red, hot, swollen, and tender. Had a temperature for ten days or two weeks, since which time has been somewhat improved, but not markedly. When in the hospital it was said that an X-Ray was taken and the lower end of the femur showed thickening. A diagnosis of tuberculosis of the bone was made and the patient discharged. Physical examination was negative, except for the fact that the child looked pale and listless, and the local signs in the right leg. On inspection the right knee joint and the lower half of the right femur was red, hot, swollen to one-third as large again as the other knee, and was somewhat tender. On palpation the bone was very definitely thickened and much larger than the other femur, which can be seen in the X-Ray photograph. Temperature 100.2 p.r.; pulse, 120; W. B. C., 12,000; P., 46 per cent; L. M., 6 per cent; Eos. 8 per cent. The Von Pirquet, both human and bovine, were repeatedly negative. On account of the 5 per cent Eosinophiles in his blood, oil of chinapodium was given and two or three round worms were passed. Two weeks later child returned to clinic. Condition remained about the same; still had swelling and tenderness; temperature, 101; W. B. C., 15,000; P., 55; L., 38; L. M., 7. Wassermann, two plus. The patient was immediately put on Gray pulv. and mercury inunctions. Within ten days the pain had gone, the swelling was perceptibly diminished, and the general condition has steadily improved, been gaining in weight, appetite better; now weighs 43 pounds. (Plates I, II, and III.) The X-Ray photo shown was taken April 13, 1918, four months after treatment was started. This shows the typical thickening of the bone with the mouse-eaten appearance of the periosteum and the peculiar worm-eaten appearance of the bone substance.

CASE 2. Aged 3 mos.; illegitimate; first pregnancy, no miscarriages. On admission presented appearance shown in photograph (Plates VI and VII); well nourished; weight, 10 pounds. Nursed up till three days of admission, when he refused to nurse and was put on a bottle, but could not nurse and was fed with medicine dropper. Physical examination negative, except for the rash on the face, hands, and feet, buttocks and scrotum. The liver and

spleen were felt enlarged. The child was immediately put on Gray pulv. and mercurial inunctions, and within ten days the rash was gone and the child was gaining in weight and continued to gain till he was discharged, four weeks later. The treatment was not carried out after the child left the hospital, I have since learned, and the child died about three or four months later of an iliocolitis.

CASE 3. Aged 4 weeks; labor normal, full term; four other children; mother has had three miscarriages, the first three pregnancies.

Present Illness. Snuffles since one week old; at two weeks became very



CASE 5. Section of spleen microphotographed by Dr. F. C. Wood, New York City. Levandite staining of spleen section.

tender to the touch and screamed out whenever handled. Pseudo-paralysis of right arm and leg; swelling of the right shoulder; weight, 6 pounds. Mother had a four plus Wassermann and the child was put on treatment at the first visit. The next visit, ten days later, the child was much less tender and was much improved; weight 7 pounds; spleen and liver enlarged. The child did not return to the clinic for two months, at which time he showed a dactylitis of both index fingers as shown in the photograph. (Plates IV and V.) It was learned at this visit that the medication had been discontinued. He was

given .1 gm. of diarsenal with rapid subsidence of symptoms. At one year the child now weighs 14 pounds 12 ounces, and looks well. The X-Ray of his hands at this time shows that there is still some thickening of the bone.

CASE 4. Aged 1 week. Showed a syphilitic pemphigus over the entire body; snuffles extreme.

Family History. Mother died in the hospital at about the time of the birth of the baby with syphilitic endarteritis and most peculiar patches of dry gangrene. The Wassermann was done on the maternal grandmother and the mother at the same time and both showed a four plus. Physical examination showed a very poorly nourished child; weight, about 6 pounds with pemphigus; liver and spleen enlarged. The child was immediately put on treatment and continued to gain in weight at the rate of 4 to 8 ounces each week.

CASE 5. L. C., aged 8 hours. A very well-nourished child, but very poor vitality. The pulse was imperceptible, skin somewhat cyanotic, the cry very weak, and reminded one of that of a kitten. The liver and spleen were markedly enlarged; the soles of the feet had two or three blebs on them. The child died at 18 hours. A section of the spleen was taken, and I wish to present this. (Microphoto.) Both the hematoxalin and the Levanditi stain, the latter showing the spleen to be teeming with spirochetae, while the former section shows nothing but a hyperplasia.

Family History. Mother and father apparently very well, both wonderfully good physique, look healthy. No history of specific infection obtained. Mother had one miscarriage at three months, one child born at 7 months and lived 12 hours; third child being this one, born at 8½ months, and lived 18 hours. The mother has a four plus Wassermann, the father has a negative Wassermann.

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DISCUSSION

Dr. E. J. Wood, Wilmington: I was especially interested because I have seen a number of the cases Dr. Sidbury has described and I am impressed by the splendid piece of work that he has done in the hospital in Wilmington. I don't know of any subject that could have been brought up that could be emphasized to more advantage than this. The time has come in North Carolina when there is no excuse for any man, it matters not how far back in the wilderness he may be situated, not to have a Wassermann on every case. The State Board of Health is now doing the Wassermann without any cost at all, and if that is sufficiently forced into our minds at this time there is no telling how much we might be able to reduce infant mortality in North Carolina by that one single thing.

There are many phases of this subject I would like to speak about. I saw the spleen Dr. Sidbury spoke about, and it is one of the seven wonders of medicine. I have never seen anything comparable to it. There are corkscrews that are so overlapped that it looks more like a bunch of kinky hair than anything else. I was tremendously interested in it because the patients in question were those who were counted beyond reproach, and I think it ought to be said in justice to that statement that it was an accidental infection. That brings up another point. We assume that syphilis is an immoral disease. Therefore, we fall down on about twenty per cent of our syphilitic cases. I am sure if we took into account the innocent infection, remembering that it can be contracted with any abrasion, we would go a long way; and after all it is not so much how much we know about medicine but how much we overlook. I think a man will accomplish more with twelve well established facts in his head than the most learned man on earth who does not use the twelve points the other fellow has at his finger tips.

When you speak of the Wassermann reaction it is wise to mention the limitations which, I believe, Dr. Sidbury referred to. Many men will have negative reports when they know the patient is infected or a positive when they have every reason to believe the patient is not infected and become disgusted and give it up. At least two or three reactions should be made for each case.

The provocative dose of mercury when the Wassermann test is negative in those cases in which there is cause for doubt or suspicion has been most helpful to us.

Dr. A. McNiel Blair, Southern Pines: I think the Medical Society is to be congratulated upon the paper of Dr. Sidbury. I was impressed with the logical arrangement of his cases and his statement in reference to the radiograms. I wish to emphasize that there is never a deficiency

of bone structure, as noted in our tubercular cases, in the luetic bone it is of the laminated type of periosteal inflammation, giving us a definitely dark bone due to increased structural changes. We must not overlook the fact that tuberculosis and lues may coexist in the same person.

The provocative dose of mercury in one or two negative Wassermanns is most imperative. Finally, may I add just one point? We, as physicians, are too prone to interpret syphilis in its various forms, congenital and otherwise, as essentially an immoral disease. How many of us have had brought to our minds our error in so interpreting?

I have in mind at this moment, a gentleman past middle life, who had occasion to consult me for a sinus involvement. At the time of taking his history he answered all questions directly and with candor. In answer to specific infections his answer was affirmative. His wife happened to be in the room. I passed over this portion of his history until, as I thought, a more opportune time, lest I perchance reveal some unpleasant portion of his history relative to the infection. Imagine my surprise after two or three days of observation to have my patient ask this direct question: "Did I ever tell you how I contracted syphilis?" He went on to state that he had the initial lesion following some dental work in which the dentist used an instrument without sterilization, previously used upon a luetic patient.

I want to express my personal appreciation to Dr. Sidbury for this paper.

Dr. H. D. Stewart, Monroe: I want to call your attention to a few points that have not been mentioned. One of them is that after the second stage of syphilis the husband will not infect the wife; but if he is uncured when he has children, he will always infect the children through the mother's blood; but he will not infect the mother after the second stage. I have seen that happen time and time again. I have seen children infected while the mother was in perfect health. I think in congenital syphilis the mother is always infected. She will either have a miscarriage or bear a syphilitic child. If she is not infected the disease may not appear in the infant but may appear later in childhood or in youth. It may come out in bone lesions or in brain lesions. I think that is a very important point. I have seen women who married syphilitics and the very fact that they married them after the second stage of the disease saved the women but did not save the children. The woman would go on in perfect health but at the same time the syphilis would be carried to the children. She will either miscarry or have a child with congenital syphilis if she is infected. If the child is infected sufficiently to kill in utero she will miscarry; but if the infection is not great enough, she may have the uterine stability to retain the fetus to full term.

Dr. L. W. Elias, Asheville: This is an old subject and yet so important that too much time cannot be given to properly emphasize it. The number of cases of congenital syphilis that are overlooked is surprising and at two points, the most prominent ones, where one would think that everybody would suspect syphilis. These two points are the eruption in a young baby, which is treated for eczema, and the pseudo paralysis, which is usually treated for rheumatism and various other such things. Syphilis should always be in our minds when any trouble arises in a baby under three months of age.

I was interested in Dr. Sidbury's discussion of the luetin test. I got some of Dr. Nogachi's test and tried it, but got no results, so I was interested to note that Dr. Sidbury recommends it. He says it requires a good deal of skill.

A point that Dr. Wood has mentioned sounds extremely hopeful, that is rubbing salvarsan in the skin. If you can get it in by rubbing it into the skin instead of giving it in the vein our troubles will be immensely lessened.

Dr. E. J. Wood, Wilmington: Let me correct a misunderstanding. The cocoa butter is to be given hypodermically into the muscles. It is given with a No. 20 syringe.

Dr. J. Buren Sidbury, Wilmington: There are one or two points I wish to emphasize. The first is the internal treatment. If we expect to get the very best results we must make an early diagnosis on the mother and give her antisyphilitic treatment and thereby give the child that much better chance to fight the disease. A Wassermann reaction should be made on every mother, and if she shows a Wassermann positive she should have vigorous antisyphilitic treatment.

In regard to the baby, in every suspicious case of lues a Wassermann should be made. It matters not how small the baby is, the superior longitudinal sinus is always easily found and with comparatively small risk to the child.

I wish to repeat that this condition is not hereditary syphilis, but that it is a congenital disease.

In my hospital experience at the Foundling Hospital I fell upon the method of letting the blood from the cut cord run into a test-tube and examining this for a Wassermann for both the mother and the child. This saved further trouble to the doctor and that extra inconvenience and pain of having to puncture either the mother or baby; also gave an early and systematic report on all cases delivered.

APPENDICITIS IN CHILDREN

J. F. Highsmith, M.D., F. A. C. S.

There is no surgical subject which has received more attention nor has there been more valuable papers read and discussed than in this disease—Appendicitis.

From the first recorded case of the disease of the appendix in the Classical Case of Mestivier, reported in 1759, of Kronlein and Milkulictz in 1884, with the contention of the priority of the operation by Thomas G. Morton of Philadelphia in 1887, as well as that of Sir Frederick Treeves about the same time, all is of interest to us from a historical standpoint. Scarcely a surgeon of notoriety but has had something to say about this disease, among these McBurney, Fowler, Dawborn, Edey, Boles, Deaver, Mayo, Robson and countless others.

It would seem that so much has been written on the subject that there is little left to be said. If, however, one may be allowed to record his impression from personal experience in a very important phase of the condition "appendicitis in children," which I have selected as my subject, let us hope that it may at least furnish the basis for an interesting discussion. Even though it has been considered as a very simple procedure to operate for this disease, and indeed it is simple when operation is performed at the timely moment, but when the golden opportunity, the hour for operation has passed, I contend there is no surgical problem which confronts us today which becomes more complicated and gives us greater concern. This is especially true of appendicitis in children.

To determine the earliest age at which appendicitis has been known to occur in the child has been a matter of much interest to the investigator. In my own personal experience I have found this disease extremely rare under the age of five, but that it increases in frequency after this age. It occurs as often between the ages of ten and fifteen as it does in later life. The causes operating to produce the disease in children are much the same as those acting in adults. It has been my lot in the last few years to have referred to me many cases of appendicitis in children, almost invariably the appendix has ruptured and a mass has formed before I see the patient. The child has been sick for a week or ten days before being referred for operation. If this paper serves no further object than to appeal to the general practitioner and through him to the parents for a closer coöperation to give the child with the "stomach ache" a better chance to live, then this poorly written paper will have at least served a purpose. I recall a case operated on a few days ago where the operation was timely, made so from the fact that this father had

brought a case some years ago in a little boy of eight years old with a ruptured appendix—peritonitis, too late for operation.

Were the diagnosis in infants not so difficult, I have no doubt it would be found that many cases of gastrointestinal disorders had their origin in but a small portion of the intestinal tract, namely the appendix vermiformis.

From an anatomical viewpoint this disease in children should be diagnosed early. Frequently a child that has been in most excellent health, whose general appearance indicates no disturbance, nutrition good and who is in no way suffering, suddenly develops a most violent attack of acute appendicitis. How can this be explained? Ochner gives as an explanation that the appendix of these children is usually large, but the secal end is much the narrowest portion of the lumen. This favors the formation of an enterolith, which eventually either obstructs the secal end of the lumen and brings about an acute appendicitis or it causes an ulcer, resulting from pressure necrosis, with the same ultimate result. In many the mesentery of the appendix is very short, which still further facilitates necrosis of the portion projecting beyond the end of the mesentery, because in the case of the thrombosis of one of the vessels in this portion there can be no compensatory circulation, while this can readily be established when the mesentery extends to the end of the appendix.

Omentum in young children is very small and not substantial, hence it cannot be of as much use in separating the diseased appendix from the general peritoneal cavity as in the adult, consequently it is necessary in those cases who come too late for an early operation to watch in suspense from day to day waiting for the best time to drain or not drain.

Unfortunately appendicitis in children is usually looked upon by the parents and friends, and frequently by the physician, as a case of violent acute gastritis or enteritis, resulting in indiscretion in dieting. Indeed, in most cases the little patient has eaten a most unreasonable amount of some indigestible substance. This is so common that one rarely sees these cases in whom the correct diagnosis was made from the beginning of the attack.

The disease in children advances much faster than in the adult. A gangreneous appendix may be looked for in sixteen to twenty-four hours after the onset of the disease—this further makes it more imperative for early diagnosis and early operation. How are we to know the condition in time? *This is the question.* There is a general consensus of opinion that the symptoms in children are often very vague and lack the pointed precision of the adult which so frequently forces a diagnosis even upon the lay mind.

We must remember that the abdomen of a little child is but a minia-

ture of the adult in the relative approximation of all the organs, and in close continuity with those in the pelvis and the upper abdomen. As it is often impossible to elicit a clear statement as to the exact seat of pain, the physician or surgeon must often depend on palpation, watching the face of the child at the time while the attention is diverted. Then as to how the story of the case runs as the lamented Murphey taught in his clinic. We will sometimes find an unmistakable history of recurrent appendicitis, manifested by vomiting alone, abdominal symptoms and fever being entirely lacking. No examination of the child with a suspected appendicitis is complete which does not include the examination of the thoracic organs. Often the first sign of pneumonia is a right illiac pain liable to be mistaken for appendicitis.

As a rule the onset of acute appendicitis in a child comes with suddenness and severity. The patient gives every evidence of being quite ill and even comparatively mild lesions give marked reaction and temperature, pulse and leucocytosis. Leucocytosis is of value as a confirmatory symptom. If the patient reacts well to the infection the white blood count will be high. If on the other hand the system is overwhelmed by the invasion, the number of leucocytes may not be increased from the normal.

Great stress has been laid upon the fact that most cases of appendicitis in children is often produced by gastrointestinal disorder. Where a child has repeated attacks of colitis and gastrointestinal disorder, especially if any tenderness is found on the right side of the abdomen, appendicitis should be suspected until the contrary is proven. Fever in appendicitis in children is apt to be higher than in the adult. Rectal examination should never be neglected where we suspect appendicitis in a child as it is of the greatest importance in the differential diagnosis of the disease.

The principal conditions which may be confused with appendicitis are, pneumonia, pyelitis, typhoid fever and intestinal obstruction. Pneumonia gives a leucocytosis even higher than appendicitis, so the blood count is not a differential point; but a diagnosis of appendicitis in children should not be made without a careful examination of the chest. Inflammation of the renal pelvis is a particularly confusing possibility when pus is found in the urine in a suspected case of appendicitis.

On the one hand we realize that pyelitis may exactly imitate the clinical syndrome of acute appendicitis. On the other hand we know from abundant experience that pus, blood, albumin and cast may be found in the urine of a child suffering with appendicitis as the primary condition. If the child's illness is due to pyelitis alone the amount of pus is usually greater than when it complicates appendicitis. But the order of symptoms, pain, vomiting, tenderness over McBurney's point, possibly a mass

can be felt, are very characteristic symptoms of appendicitis. If possible, get a blood count as leucocytosis is the most constant symptom. *Early diagnosis and early operation is the keynote.* Where appendicitis is suspected in a child or in an adult, as for that matter, remember that "purgation means perforation." In our experience administration of purgatives in the early treatment of appendicitis, has done more harm than any other factor connected with the disease. If a child has stomach-ache and you are suspicious of appendicitis, for Mercy's sake, do not give it a purgative, but rather give it an enema, apply ice cap over the appendix and nothing by mouth; try this and consult a surgeon.

As we have before said, most cases have been sadly neglected and brought to us for operation when the forty-eight hour limit was passed, consequently the conditions are complicated. But happy to say, this does not hold true with appendicitis in adults as the profession has become educated. Seldom do we see an adult where the neglect has been due to neglect of physician.

The following, which I report from a series of cases, will illustrate in a brief and practical way conditions as they have come to us:

Case 9229. Male, age 13. Entered the hospital at midnight. Gave a history of twelve hours prior to coming to the hospital patient had general colicky pains, rigid in region of appendix, with nausea and vomiting. Temperature, 101 F.; pulse, 130; W. C. B., 14,000. Operation advised and performed, acute appendix removed, wound closed without drainage. Patient made an uneventful recovery. Discharged from hospital on the fourteenth day.

Case 9108. Female, aged 10. Gave a history of being sick seven days before coming to hospital; pain in abdomen with general colicky pain throughout; vomiting with high fever; pain settled in right side around McBurney's point. She was given purgatives, kept in bed and treated for bowel condition, entering the hospital one week after her first sickness. At the time she entered the hospital her temperature was 100; leucocyte count, 18,000, with a very definite mass to be felt in right side. She was placed in bed; nothing by mouth; ice bag over her right side; Murphey drop saline given per rectum one hour out of every four. Temperature, 103 F. Eight days from time entered hospital mass had subsided, temperature was normal, and she, to all appearances, was on the road to recovery. Here I had two conditions confronting me, viz.: one, to discharge her from the hospital, send her home and await a future attack; another, to advise operation. In this particular case we decided to operate, made a right rectas incision, found a post-secal appendix densely bound down with many adhesions about it, had sloughed from its secal attachment, tissue highly vascular, bled very profusely. We wished that we had not attempted the operation. However, the appendix was removed as best we could, or what was left of it was removed and drainage established. This child went on to recovery, being discharged from the hospital on the twentieth day after the operation. Wound healed and to all appearances in good condition. This case, I felt while operating, had I known the condition it would have been as well not to have operated, as the mass had disappeared and to all appearances on the road to recovery.

Case 9132. Admitted to hospital, stating that one week previous had pain in stomach, nausea and vomiting, soon settled in region of appendix; since this time confined to bed; rapid pulse, with soreness over region of appendix; a mass suspected, though the muscles were very rigid and it was hard to be sure about this. On the second day after entering the hospital rectus incision revealed post-secal appendix with abscess walled off at the distal end of the appendix under the lower border of the liver; appendix had ruptured at the tip. Same was removed, drained and patient placed in Fowler position with Murphey saline drop one hour out of every four. Considerable drainage followed, slightly fecal for a few days. Patient left the hospital twenty-four days after operation, condition good.

Case 9117. Child 9 years old. Extremely ill for a week. The day before coming to the hospital the parents had given the child a dose of calomel, followed by castor oil, sent for a doctor. As the pain was so acute case was referred to the hospital. On entering found abdomen absolutely rigid and distended, vomiting, rapid pulse and all the symptoms which go to make an alarming condition. Operation performed at once; appendix found to be ruptured, abdomen filled with pus, stump of appendix tied off with catgut; median drainage over pubis, also in lower angle of wound; stomach lavage. Child placed in Fowler position. Murphey drop. Though extremely ill, reverse peristalsis, continued stomach lavage, child made a slow recovery.

Case 9237. Male, 8 years old. Had been sick for ten days; decided mass in right side, unquestionably appendicial abscess. This case was placed in Fowler position, nothing by mouth for four days, with ice bag over right side, at which time the mass had just about subsided; then for four days it was given four ounces plain egg albumin water every four hours, with purgative dose of castor oil on fifth day. At this time its temperature was normal and mass had disappeared. Parents were advised to take the child home without operation, with a promise that they would return within twelve hours after the time it was taken sick, provided he has a future return of this condition.

Case 8970. Child 7 years old. Extremely ill for a week; brought to hospital in a most desperate condition; abdomen rigid with localized mass around McBurney's point; reversed peristalsis, vomiting, rapid pulse, and all symptoms which go to make an alarming condition. Against my best judgment, but anxious to give the case a chance, operation was performed on the second day after entering the hospital. Appendix found to be gangreneous, ruptured and was poorly walled off, appendix removed, abdomen closed, patient placed in Fowler position with Murphey drop. The pulse became weak and thready, no bowel movement, the stomach lavage used daily; but on the third day after operation the child died.

These cases, which I have briefly reported, I hope may draw a picture in your mind which coincides with your experience in similar conditions.

In conclusion, remember that appendicitis in children is as common as in the adult. Do not mistake appendicitis to be errors in feeding, indigestion, intestinal colic, etc. Avoid purgatives, especially calomel, when you suspect the child to have appendicitis, as strong purgatives undoubtedly causes perforation and general peritonitis. Early diagnosis and prompt operation, and we have but little to fear for our patient's safety.

PRACTICE OF MEDICINE

Dr. I. W. Faison: Dr. John Whitehead of Salisbury, the chairman of this section, telegraphed me last night of the extreme sickness of his boy, who has been running a temperature of 104 for two days, and his wife is just home from a hospital in Philadelphia. It put him in a position that it was not right for him to come. It is the first time in twenty-five years he has offered to do anything for this society. He promised to do it on account of his love for me. No man in the profession in North Carolina do I think more of than John Whitehead. I do not blame him for not coming. It would have been criminal for him to have come. His paper will be in the Transactions. He is a man competent to write a paper, and that paper will be worthy of a Whitehead.

THE EXISTENCE OF TROPICAL SPRUE IN NORTH CAROLINA

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Tropical sprue will make one of the most interesting chapters in American medicine and North Carolina will play a prominent part in this history, for the reason that it seems probable that the first reference to this disease was made in the *Natural History of North Carolina* by Dr. John Brickell. I have made reference to this elsewhere and will only repeat here that it seems probable that Brickell's reference to white flux was really tropical sprue. Brickell was an Irish physician who was sent by the Crown as an emissary to the Cherokee Indians in the latter part of the seventeenth or early in the eighteenth century. Our profession would do well to look into the life and work of this Dr. Brickell for he deserves it if for no other reason than the few medical references in his natural history. In this work you will find the first account of the clinical manifestations of uncinariasis and a very good description of the lesions of yaws. If he had lived in one of our neighboring states there would probably have been erected about a century ago a monument to his memory on the capitol square. Recently his book was reprinted by the State and can be had for a nominal price in Raleigh.

In 1776, in Barbadoes, Hillary described sprue but there was much contention regarding the identity of this condition and true eastern sprue

which was thought could only exist in tropical eastern Asia. This is not the first time in medicine that we have been led astray by geographical claims of the limit of disease. We saw it in pellagra and we are seeing it every day in sprue. Sir Patrick Manson, the father of tropical medicine, was the first to assert that the eastern and western sprue were identical. There seems to have been much variation in the severity of the disease in different sections but apart from this there can be no doubt that the single entity covers the whole record under that name and, doubtless, many more not included because of the fact that in sprue there are many departures from the typical disease picture.

Sprue has been seen by me in North Carolina frequently during the past four years. It was recorded by William Allan of Charlotte and Houston B. Hiatt of High Point several years before in the *Journal of the American Medical Association* and their contribution formed one of the most important communications of the year. Personally, I am deeply indebted to them. My contact with the disease was brought about by the fact that it is frequently confused with pellagra. When a diarrhœa is stubborn it is the custom to suspect pellagra and when added to it there is a sore tongue or mouth there can be no question, so many cases of what helped to cause the creation of the term "pellagra-sine-pellagra" came to me. I have followed many of those cases and in almost every instance the condition in time proved not to be pellagra. I now know that they were cases of sprue and that the disease is *common* in North Carolina though seldom recognized. In no condition can recognition mean so much for in the early stages the disease is very amenable to treatment. Since this first acquaintance I have had opportunity to observe sprue from the Philippines, sprue from Porto Rico, and sprue from Boston. Like pellagra, the disease will soon be recognized in many sections, though it is much more strictly a tropical disease than is pellagra.

There is no great complexity about the symptoms of sprue. The symptoms are chiefly diarrhea, sore tongue and mouth, and anemia.

The diarrhea is quite distinctive. The stools are very large, soft in consistency, called by some writers "cowpads," unattended by tenesmus or blood, seldom liquid, light in color, acid in reaction, usually frothy because of fermentation, and passed in the early hours of the day. It is remarkable to note that after noon the movements usually cease until the early hours of the next day. One of my patients told me that during the night she passed enough feces to half fill one of the large bedroom slop jars. The amount of gas attending the movements is unusually large and the odor is peculiarly offensive. The microscopic examination of the feces shows a tremendous amount of fat. This can be quickly determined

in many ways. We have fallen into the use of a simple stain with Sudan III. Quantitative analysis shows that there is a tremendous loss of both fat and nitrogen. The Schmidt test diet was given for three days in making this determination. For the fat determination the Soxhlet method was used and the nitrogen was determined by the Kjeldahl apparatus. Fortunately, these methods are not necessary for the diagnosis.

The tongue in sprue is variously affected. In many of the cases in this State the patient will hardly mention it unless questioned. It is not so red, not nearly so painful, and not so persistent a symptom as is the rule in pellagra. The writers say that the tongue may be denuded and that it may become deeply furrowed. My experience teaches that the best criterion is a tongue more flabby, less intensely red, not so pointed as is seen in pellagra. I have never seen salivation in sprue. On the lateral aspect of the tongue, far back, opposite the molars, there often occurs ulcers, known usually as Crombie's molar ulcers. These ulcers do not occur as a rule in pellagra.

In pellagra anemia (unless there is a complication) does not occur. In sprue there is invariably an anemia. You will question sometimes, if your case is pernicious anemia or carcinoma of the stomach, when your patient first enters your office. The blood picture does not suggest pernicious anemia morphologically but the color index is usually about 1.25. The hemoglobin often reaches as low as 20. I have been struck with the element of surprise which I always feel on making the blood examination in these cases for the degree of anemia is invariably much greater than I had expected. This anemia is very distinctive when it occurs with the mouth and intestinal symptoms. The question of confusion with pernicious anemia has furnished material for discussion but the final summing up of the matter is that the confusion is not warranted.

Many writers lay great stress on the diminution in the size of the liver and spleen in sprue. Sir Lauder Brunton does not regard it as a matter of any importance but rather considers it a condition resulting from malnutrition and which might occur equally as well in many other conditions. My own experience is that it plays too small a part to deserve mention. There are too many sources of error in determining such a state of the organs in the light of tremendous distension of the intestines with gas pushing upward with great force.

The nature of the disease is still under discussion. The functional tests suggest a pancreatic inactivity but the work of Pratt and others would indicate that the pancreas in some cases functions fairly well. At autopsy pancreatic changes have been marked but again Pratt calls attention to the danger of error in regarding a pancreas which is hard

and resistant as a diseased organ for in many such cases the function is not impaired. To my mind this hardly answers the question and I cannot but feel that it will sooner or later be classified as a pancreatic disease. In many cases Mayo-Robson found the pancreas the seat of inflammatory change and in other cases pancreatic involvement formed an important complication.

Recently P. H. Bahr presented to the London Society of Tropical Medicine and Hygiene the results of his work in which he attributed sprue to a yeast probably *Monilia albicans.* He seems to have met with only the most positive opposition to his views. But more recently Col. Bailey K. Ashford, the father of our present knowledge of hookworm disease, working in Porto Rico, came to practically the same conclusion. He has produced a curative vaccine from his monilia which is yet in the experimental state and he has also produced the disease experimentally. His conclusions have not yet been accepted generally but cannot be treated trivially because of the high position in experimental medicine occupied by the distinguished observer.

In a recent number of the *Journal of Biological Chemistry* Professor E. W. McCollum included sprue with diseases of faulty nutrition. What his basis for this is I do not know unless he groups sprue with pellagra as has been erroneously done so often.

One of the most notable things about sprue is its confusion with pellagra. In a recent number of the *Journal of the American Medical Association* there is an article by Major Gideon Wells of Chicago and others who made up the Red Cross Commission to Rumania. Among other references to pellagra Dr. Wells spoke of the large bovine stools containing undigested grains of corn which they frequently saw. As a matter of fact the stool in pellagra is never of this type and either they observed the stool of victims of sprue *per se* or else the stool of a sprue victim with that disease complicating pellagra. I have seen this a number of times and in one case I saw in Syracuse, N. Y., a case of sprue from Porto Rico, in which the complication with pellagra as a secondary factor was noted.

There can be no doubt that sprue and pellagra are entirely separate and distinct diseases. This view is not generally accepted for several years ago in an editorial in the *London Journal of Tropical Medicine and Hygiene,* it was contended that the two conditions were really one disease and used as an argument a statement of mine in my book on pellagra. The very error of the writer in interpreting my views in such a way led me to a rather extensive study of the differentiation of the two conditions. In 1915 I presented to the Association of American Physicians my conclusions. The method of exact differentiation must be made

in a study of the feces after a test diet. In pellagra I found that there was normal utilization of both fat and nitrogen. Pratt and Spooner in sprue found a fat loss of 45 per cent and a nitrogen loss of 15 per cent. They also found by the Sahli glutoid capsule test and the thymus nucleus test that there was in addition to the intestinal inactivity a definite loss of pancreatic function. All of this work I duplicated in pellagra and found that there was always a normal utilization of fat and nitrogen and I also found that in sprue there was this great loss just as had been found by the Boston observers.

Why pellagra and sprue so often occur together is still an unsolved problem hitherto unmentioned in the literature. The Rumanian report suggests a line of most important and interesting study.

The treatment of sprue is usually in my practice very discouraging. While it responds promptly to treatment of the right sort still the patient is hard to manage because it is not a drug-cured disease. Patients will take drugs *ad infinitum* but when you only prescribe diet they change doctors at once. Drugs will not influence sprue at all unless it be that emetine will. This will be mentioned later. The diet is the essential thing and no case will recover unless the patient has enough confidence in the diagnosis and in the doctor to submit with a proper spirit of co-operation. Country people almost invariably will not drink milk so I have discarded any effort to carry out this plan of treatment which was the one chiefly advocated by Sir Patrick Manson. I think in the light of the study of the utilization of fat in the disease that it is just as well not to give milk but to rely on lean beef which should be free of fat and fibrous tissue. One pound of this round beef is chopped very fine, divided into four parts, cooked very lightly on a hot fire, and given every four hours. In addition to this the patient is given three pints of hot water during the twenty-four hours. If the patient is very sick the juice of the fresh beef is expressed and is given in tablespoonful amounts about every one or two hours. The patient must be kept absolutely in bed and should be dressed in flannel. After improvement begins I add small and increasing amounts of toasted bread crumbs. Sir Patrick Manson recommended strawberries and they might do in England where that fruit is very different than here but I have never had the temerity to try our local fruit in this connection. If fruit juice is needed I should prefer lime or orange juice.

In sprue there almost invariably occurs an absence of hydrochloric acid so I find it a good plan to give 15 minims of the dilute acid before and the same amount after each meal. Nux vomica may be combined with it to advantage and serves the double purpose of stimulating an appetite and satisfying the demand of the average patient for medicine.

Some writers have advocated pancreatin in salol coated capsules. In one case I used this to advantage together with the other treatment just mentioned. In one case I have had good results from emetine but again I have seen it fail; the diet plan, however, never fails.

The most important thing about treatment must be early diagnosis.

In conclusion allow me to say that before this Society meets again it is probable that a large number of us will have entered the service of our army. Coming from the South, we will be expected to know this disease as well as many other of the tropical conditions. If we know them as we should from our geographical position we will be able to render real patriotic service, we will be able to elevate the tone of Southern Medicine in the eyes of the profession generally; we will reflect credit on our State, and we will materially help ourselves.

DISCUSSION

Dr. B. E. Washburn, Raleigh: Dr. Wood's paper is, I think, a very important one. It proves that tropical sprue, a very important disease in many parts of the world, exists in North Carolina, although it has not heretofore been recognized. Of late years we have discovered that many diseases considered as existing only in the tropics are found in temperate climates and in our own country. After a visit to the tropical regions of South America one recognizes here in North Carolina patients suffering from illnesses resembling diseases thought to be found only in the tropics. In fact, here in North Carolina can be found cases which present clinical pictures resembling leprosy, yaws, and other maladies. Dr. Wood's paper is timely and important in calling to our attention the presence of tropical sprue in our midst. We should watch for these cases and study them and it is certainly our duty to prepare ourselves that we can prevent such diseases becoming epidemic.

Dr. F. C. Strosnider, Goldsboro: Sprue is a most interesting disease, especially to those who treated pellagra when it was first diagnosed in the eastern part of North Carolina. I have often wondered why so many of our cases died when we first began treating pellagra in the eastern part of the State, there were so many in which there were gastrointestinal manifestation. In 1909, when Dr. Wood treated something like 38 cases in one summer, we treated them as we did other cases, and they died. They had the symptoms which Dr. Wood has outlined, and I am of the opinion we were treating some cases of sprue rather than pellagra. My experience with sprue is quite limited. I have one case and that I have seen quite recently in consultation with a colleague. A lady had the disease about one year. Literally speaking she was skin and bones. This

case ran a temperature ranging between 99 and 101. Her anemia was marked. As to the dieting, the doctor who had been treating her had tried and recommended many treatments except dieting. Her diarrhea responded promptly to emetine hydrochloride gr. ½ hypo every other day. I gave her one dozen treatments. Then I put her on rare beef, making sandwiches of same between thin slices of toast. When I inaugurated the milk treatment, milk brought to a boil, with lime water, this seemed to work better than any drug which I used. In a month's time she was regaining her strength. However, she tired of hospital regime and went home and I lost sight of the case. Sprue is a thing that you could easily diagnose for pellagra. The only things that you would have to eliminate would be tuberculosis of the intestines, amebic dysentery, and toxarisnas.

Dr. R. H. Lafferty, Charlotte: I consider this an epoch-making paper for this Society. I know some of the men here just as the doctor spoke were indulging in postmortems. They recall cases which they thought were pellagra. I do not have occasion to see these cases except as they are sent in frequently for the röntgenological examination.

I have one autopsy in which I can indulge. The case came in last week from a distant town, and they had done everything that they could possibly think of except the X-Ray and they sent her thinking that would help. The symptoms seemed pellagra without the skin disease, the red tongue, the diarrhea, extreme anemia, count two million. That was the report that came with her. Before the examination was completed the patient died. I cannot keep from thinking of sprue in connection with this case. The patient had lost a great deal of weight and still weighed about 190. There are one or two other cases somewhat similar that did not die as quickly.

I think the paper is an epoch-maker, in that it is calling the attention of the Society to the fact that sprue does exist here and we have got to keep it in mind and recognize it when it does come up.

Dr. Benj. K. Hays, Oxford: The man who is perhaps the world's greatest authority on pellagra is sitting in this house. I believe the gentlemen would be glad to hear from Dr. Goldberger of the United States Public Health Service.

Dr. Joseph Goldberger, U. S. Public Health Service: Doctor Wood is rendering an important service in calling our attention to the existence of sprue in this country. He has well brought out the salient differential points between pellagra and sprue. The most serious difficulty that is likely to be encountered will be to distinguish between the milder forms of sprue and certain forms of pellagra, especially the so-called "pellagra-

sine-pellagra." Fortunately, however difficult or impossible this may be in any particular case, the treatment of sprue as outlined by Dr. Wood will serve very well in cases of pellagra.

Dr. E. J. Wood: I took the position of the rather extreme types intentionally. I have seen the very mild sprue that Dr. Goldberger speaks of, but I have not yet been willing to diagnose those cases sprue until I have had more experience. I have also seen many cases of pellagra where skin eruption was lacking perhaps four years, perhaps at the end of five years appearing. The number of cases is increasing very rapidly and it is being erroneously diagnosed every day. I think in the end probably the most important differentiation will be the help of the blood count.

MALARIA FEVER; THE EFFECTS OF ITS TOXINS UPON THE KIDNEYS

C. F. Strosnider, M.D., Goldsboro

Every one in this age of thoroughness in medicine suspects the throat and the middle ear until both have been found normal, but the blood and urine as a means of gaining diagnostic information are, as a rule, not considered.

I know of no disease endemic in the central and eastern part of our State which plays so important a part in the patient's subsequent life as does malaria. There are many complications to which the malarial victim may fall heir, but at this time I want to direct your attention to the kidneys. The delicate anatomical structure of these organs at once directs our attention to the fact that they are very sensitive to the presence of poisons or toxins. A patient ill with a malarial paroxysm presents every symptom of toxemia, that is, headache, aching of limbs and back, nausea and at times vomiting and diarrhea, fever and sweating. The true explanation of the origin of the paroxysm is through the agency of a toxin liberated by the sporulative act. The existence of a toxin, the product of a malarial parasite is almost universally assumed by students of malaria. The grounds for this assumption are as follows.

1. An analogy with other infectious diseases.

2. The existence of a relative immunity in many people living in endemic districts by the formation of an antitoxin.

3. Degenerative changes in the kidneys, liver, spleen and other organs, not otherwise explainable.

4. Blood changes, such as anemia out of proportion to the number of parasites.

5. Increased toxicity of the urine and sweat, as is evidenced by the toxins stimulating the sweat glands and kidneys, thus giving rise to profuse sweating and frequent voiding as the paroxysm is subsiding.

6. The existence of coma in malaria.

7. The fever and its relation to parasite sporulation.

8. Dr. Rosenow defibrinated and filtered the blood drawn from the vein of a man having a malarial chill, and injected said blood into a normal healthy man. In forty-five minutes the man thus inoculated became chilly, had headache and aching back and limbs. This was followed by a high temperature and drowsiness. Duration of the paroxysm was eight hours. This patient's blood was examined carefully for eighteen days and was found negative to malarial organisms. This experiment proves conclusively that the toxin freed during sporulation gives rise to the paroxym, and by this toxin's irritative properties the kidneys, as well as other vital organs, are frequently damaged. Two cc. of defibrinated filtered blood from the patient first mentioned, was injected into another healthy individual, gave rise to a slight paroxysm, while 4.5 cc. given to another man caused a more marked reaction with a rise of temperature, indicating in a very definite manner that the severity of the symptoms were directly due to the quantity of poison introduced. Thus a certain dose of toxin is necessary to excite a paroxysm. The æstivo-autumnal parasites do not sporulate as uniformly as do the tertian and quartan, hence the poison is liberated in fractional doses and the fever or reaction is more continuous or irregular.

We may thus attribute the anemia incident to malaria to the mechanical destruction of the red blood cells by the plasmodia and their liberated toxins and the activity of the blood-making organs.

Therefore, it is the constant presence of the malarial toxins that gives rise to the complication in question. In the acute cases this complication should be readily detected by the symptoms of continuous headache, nausea, vomiting, puffiness of face, feet, etc., and, by urinalysis which will show a smoky, scanty urine with an abundance of albumin and numerous casts typical of the condition. The pathology of the kidney evidencing the above findings, according to Deitrick, is as follows: "Microscopic examination shows a marked pigmentation of the Malpigion corpuscles together with degenerated tubular epithelium. While the epithelium of the tubules may be healthy, it often shows cloudy swelling and necrosis and in the straight tubules there may be casts of various sorts. In chronic malaria the blood vessels, the glomeruli and the walls of the renal tubules may undergo amyloid degeneration. This is more profuse in the kidneys than in the other organs."

However, it is not the acute cases which catch us off of our guard,

but the latent and chronic cases, or in other words the resumé of the one week treatment for the cure of malaria. I do not wish to leave the impression that this is always the fault of the physician, but many times the patient who flatly refuses to continue medication until a cure can be effected; or, to those patients, who boycott the physician and proceed to practice medicine on themselves, being aided and assisted by the ever obliging druggist, using as his utopia such preparations as "Grove's Chill Tonic" and quinine irregularly. Therefore, judging from the reputation of both, they discontinue treatment as soon as his feelings will permit, for to them the allaying of symptoms is all that is necessary. It is from this class of patients that we get cases who give indefinite or no history of ever having had malaria. Thus it is that without a thorough physical examination, including blood and urinalysis, the real cause will be overlooked and the patient doomed to inefficiency and chronic nephritis. To illustrate the findings in an early subacute case of kidney irritation, the following case is cited:

Master E. R. White, age 9 years; residence, city. Family and past history negative to infectious diseases, including malaria. T. P. R., normal. He was found to be underweight and undersize for his age, and anemic. He complained of dull headache, anorexia, vertigo, extreme nervousness at all times, slept poorly. Frequent attacks known as biliousness. Laxatives necessary thrice per week.

Physical Examination. He was slightly jaundiced, skin dry, muscles generally relaxed, reflexes exaggerated. Handgrip very weak. Heart enlarged, regular, rapid rate with poor volume and hemic murmer at apex. Enlarged abdomen, spleen and liver. Face and ankles slightly puffed. Both kidneys tender to palpation.

Urinalysis. The urine was clear, reaction acid, sp. gr., 1010; albumin negative at 6 a. m., but positive at noon and 6 p. m. Casts: Many fine and coarse granular, also few hyalin and epithelial. Sugar, neg. Bile, moderate amount. Blood: Talquett, 60 per cent; red cells, anemic; no normoblasts or megaloblasts. Mononuclears and transitionals increased in number and loaded with debris. Tertian malaria segmenting organisms and gametes were present. Two weeks later both types of organisms were present, but decreased in number and stained very faintly; hgb., 75 per cent, albumin, a trace; casts, a few of each variety mentioned. Jaundice gone, appetite improved, as well as the other symptoms mentioned. At the end of twenty-one days the blood was clear of plasmodia and the urine free of its pathological elements. The patient made an uneventful recovery. There was nothing special used in this case in the way of treatment save that of anti-malarial.

Cases in Extremis of Kidney Irritation. I know of no better way to present this class of cases than to briefly cite the histories of three cases which came under observation during my intern service in the James Walker Memorial Hospital, Wilmington, N. C., July, 1908. These cases were referred to the hospital as heart cases by two local physicians,

who themselves had given heart tonics and drastic purgatives a free hand in an effort to save the patients. Owing to overwork and the absence of the patients' parents at the time of admission the diagnosis was not challenged for forty-eight hours, when the meager history and detailed examination revealed the real trouble:

History. The patient was a colored girl; age, six years; residence, East Wilmington. Negative to malaria. Mother stated that the child was healthy until one year previous to present illness, when she began to lose weight. At the beginning of her illness she had alternating sluggish days. Appetite poor for past six months. Child not able to get enough sleep. Had frequent attacks of diarrhea.

Entrance note. Colored girl, undersize, eyes swollen shut. Extremities and body swollen twice normal size. Child stupid; sleeps most of its time. Body cold.

Examination. Heart greatly enlarged, general valvular insufficiency, pulse rapid, regular with poor volume. Fluid in the pleural and abdominal cavities. Spleen and liver greatly enlarged. Reflexes very sluggish. Unable to open eyes. Temperature subnormal. Nausea, vomiting and diarrhea present. Fecal analysis; negative to ova of intestinal parasites. Urinalysis: color, amber; reaction, acid, sp. gr., 1016; albumin, very large ring; sugar, negative; sediment, many red blood cells, numerous fine, coarse, hyalin, and cellular casts. Blood analysis: hgb., 35 per cent (Talquett): five red blood cells containing tertian malaria plasmodia to the microscopical field.

Treatment. Quinine sulphate in solution every four hours day and night for one week, at the end of which time the blood showed plasmodia equally as frequent as at first, but much fainter; hgb., 50 per cent. General anasarca practically gone; albumin and casts less in amount and number respectively. Bearing in mind quinine poisoning, I split the dose of two and one-half grains every four hours for two weeks more, when the blood was found to be free of plasmodia; hgb., 65 per cent; albumin, small ring; casts present, but greatly reduced in number. The child was on regular diet, up and about the ward. At the end of three weeks I put the child on three grains of quinine thrice daily. At the end of five weeks the patient was discharged with both the blood and the urine free of their pathological elements.

After finding malaria plasmodia in the blood of the case just cited, I enthusiastically examined the other two cases, one aged eight years and the other fifteen years, with similar history, physical findings, treatment and results as the case cited in detail.

During the summer of 1914 I had fifteen cases of malarial congestion, and five cases of pyelitis due to malaria. Of the congestive cases, six were acute and nine were subacute, four of the latter cases being of the extreme type.

We should not overlook the fact that young children are frequently infected with malaria, such being quite frequent between the ages of eighteen months and ten years. In infants and young children the type of fever is most often *quotidian tertian*, the paroxysm occurs more

often during the night and early morning than in the adult—the mother volunteering the information that the child has cold extremities, pallor, vomiting, drowsiness, and sometimes convulsions. Gastrointestinal symptoms, particularly nausea, vomiting and diarrhea are common. Thirst is intense, restlessness, and wakefulness being frequently due to head and stomach. Enlargement of the spleen is quite constant, edema and anemia quite common together with the complications in question.

To illustrate: In June, 1914, I was called to see a child two years of age with the following history:

"One week ago the baby refused to eat regular diet. It became nauseated and vomited several times every other day at about the same hour, at which time we noticed that the baby had a high fever, nervous and its extremities cold. Two days ago he became drowsy, we gave him a dose of oil and his bowels have been acting very freely ever since. Yesterday he was apparently better. This morning he felt cold and became drowsy, his fever rose, and one-half hour ago he began having convulsions." The child was having convulsions when I first saw him. His temperature was 106°. By the energetic use of hydrotherapy the temperature was soon reduced to the realm of safety. Having slides with me, some smears were made and stained and upon examination four tertian malaria plasmodia laden corpuscles were found to the microscopical field. Hgb., 50 per cent; widal, negative. Urinalysis showed a large amount of albumin and casts incident to acute nephritis. On the second day following the convulsions the child was unable to walk or coördinate any leg or arm movements. The child was treated with quinine hydrochloride by hypodermic, grains three twice daily for two days and then four grains via mouth every four hours for one week, and then thrice daily for two weeks. At the end of four days the temperature was normal, diarrhea, nausea, and vomiting had subsided; and in ten days the blood was negative to plasmodia. The urine was normal in twenty-two days. The motor-muscular system, which gave the parents and the physician much occasion for worry and thought, gradually improved and at the end of three months the child was discharged, well.

Life insurance examiners, for your information the following case is cited:

Mr. B. Age 23 years. White, single, bank clerk. Family history, negative; past history negative, save for an attack of malaria fever four years previous. Has had no chills or fever since original attack. Has suffered with anorexia, headache, muscular weakness, insomnia, and nervousness for the past two years. In 1915 he was examined in W. for life insurance, but was refused insurance on account of having albumin and casts in his urine. The examining physician advised him of his serious condition, that of suffering from Bright's disease. The young man was put on a restricted diet, and advised that his case was practically hopeless. In June, 1916, this young man came under my care. He stated that he had no desire for food, was nervous all of the time, could sleep but part of the night, memory poor, had headache every day and was too exhausted to pursue his work. His physical examination was that of the subacute case above cited. Urinalysis, negative except albumin in a large amount, many red blood cells, and many hyalin, fine and coarse granu-

lar casts. Blood: many tertian malaria plasmodia and gametes; large mononuclear and transitional cells increased in number and loaded with debris. Hgb., 60 per cent.

Treatment. Antimalarial pushed for three weeks; then reduced, but continued for three weeks longer.

Results. At the end of three weeks the urine was clear, one gamete found to the slide. At the end of six weeks the blood was clear of gametes; hgb., 80 per cent. The patient had gained twelve pounds and had secured the desired amount of life insurance.

Death as a result of kidney disease is far greater in the tropical and subtropical zones, the habitat of malaria fever and mosquitoes, than in those zones free and not thus encumbered.

Let us ever be on our guard and treat malarial infections as a serious and dangerous disease. After ten days of illness from malaria, when improperly treated Craig says gametes develop in the blood of the patient which are capable of infecting the anopheles mosquitoes. Hence you see the importance of effectual treatment of all acute cases within ten days. It is strange but true that a large proportion of the profession appear to believe that a few doses of quinine, if followed by the disappearance of symptoms, signifies the cure of the infection. As a matter of fact quinine in the treatment of malaria is like mercury in the treatment of lues, in that its use must be persisted in for a considerable time after the symptoms of infection have disappeared, if one desires to really cure the patient and thereby avoid the sequence in question.

DISCUSSION

Dr. E. J. Wood, Wilmington: I have seen a great deal of malaria. I used to see a great deal of the pernicious type of malaria and I have seen a great deal of complicated malaria in which the urine was loaded with blood; a true hemorrhagic condition. I think there is a public health phase of the question that we have not appreciated as fully as we should. We note the economic loss from the acute cases of malaria, characterized by chills, fever and all that, but we have yet to learn how much malaria does in the production of later changes, how much this malaria played in the production of the chronic nephritis of later life. It is a very significant thing that the rice planters on the Cape Fear river have all died and rice planting has been abolished. The Cape Fear rice only a few years ago was so superior that the British Government specified Carolina rice. The increase in the Texas cultivation of rice in a modern way did away with the ante-bellum way in this State, but another factor is that many old rice planters on the Cape Fear river have died of chronic nephritis. I knew each one of them. I have often thought, especially since Dr. Strosnider's study of the kidney in relation

to malaria, that if those men had been a little more careful in their mosquito protection and had taken their quinine with more diligence some of them might have been spared death from chronic nephritis.

Dr. F. C. Strosnider, Goldsboro: I have observed that the toxin of malaria makes itself felt in more ways than that in which I have mentioned. Having seen forty-two cases of malaria with the complications in question I felt it important to report them for the benefit of the profession in the eastern part of the State.

AMEBIC DYSENTERY

A. J. Warren, M.D., Salisbury

It is the opinion of the writer that amebic dysentery is more prevalent in North Carolina than is generally recognized, the writer having diagnosed and treated several cases during his limited experience. It is not diagnosed because it is not looked for. It is more or less a universal opinion that it is a disease of the tropics. While it is most prevalent in the tropics, it is not confined to those particular latitudes, and it is very common in our Southern States.

It is the sincere wish of the writer to make this paper as simple and practical as possible, therefore the protozoölogy and the pathology are purposely omitted. Believing that the most common mistake made relative to amebic dysentery is the failure of diagnosis, I am going to devote the bulk of this paper to the correct technique for a proper diagnosis. I wish to give due credit to Drs. Bass and Johns, my teachers, for the technique described.

There are many species of amebae, only a few of which live as parasites upon other animals—they are therefore known as endamebae. There is at present considerable difference of opinion among authorities on the subject, as to whether there are one or more species of endamebae found in the intestines of man. It is certain that a supposedly harmless ameba —ameba coli—is found quite often in the discharge from man, and that this species is quite different from the endameba that causes dysentery; and it is important to know the difference between the two.

It should be understood that the disease process of amebic dysentery consists chiefly of ulceration of varying degree and extent in the colon, and that the endamebae are present and reproducing particularly on the edges of the ulcerating area. There is more or less pus and mucous being thrown off from the diseased surface at varying intervals, and this exudate contains the endamebae we desire to find. Never look in the

hard formed part of a stool for the endamebae. If the disease is quiescent the pus and mucous may be seen on the outer edge of the formed stool. If the disease is active the entire movement may be nothing but pus, mucous and blood. This is ideal material for examination. Cases of acute dysentery can have such an action at most any time and furnish the proper specimen for examination. The examination must be made within one or two hours from the time the specimen was discharged, as endemebae rapidly die and their appearance changes upon their exposure to air. During cold weather the specimen must be examined even more promptly, unless it is kept warm artificially. Keeping the bottle containing the specimen in warm water is a good method. Where it is practical it is always better to have the patient come to the office and there pass the specimen into a receptacle for an immediate examination, or carry the microscope to the bedside. The next best thing, when a microscope is not convenient, is to make several proper slides from the bloody mucous and then allow them to dry. These may be satisfactorily examined for endamebae at any subsequent time by staining them, provided one is at all familiar with stained endamebae. If you are examining a liver or other abscess for endamebae, do not examine the contained pus, but scrape the walls of the abscess and make your smear from the scrapings.

Preparation of Specimen. With an ordinary wood toothpick held in each hand, pick out particles of the purulent mucous and place upon a slide. Spread just sufficiently to make a preparation of proper thickness to admit the light to pass through—but not so thin as to make it dry out quickly. By prompt work a proper examination can be made before the specimen dries out. It is better to spend a short time examining each of several specimens prepared from different parts of the stool, than to spend a long time on a single specimen. For those who cannot work rapidly it will be better to use a cover glass. Put a cover glass on the material on the slide and make a slight pressure to thin out the specimen, but be careful not to get it too thin. The high dry objective is generally used to examine for endamebae, but with a little practice they can be seen with the low power lens and the time required to look over a given area is considerably less. The light must be reduced until the hyalin objects on the slide are clearly seen. Pus and blood cells are easily recognized. Endamebae are about two or three times the size of a pus cell. They appear as large cells, with a clear hyalin ectosarc, surrounding the coarse endosarc. In the endosarc may appear blood cells and bacteria. In active endamebae the ectosarc or outer portion is constantly changing shape. It may throw out an arm or pseudopod into which the endosarc flows. It may project another pseudopod in an-

other direction. It feeds by simply crawling upon its prey. These movements are slow and are known as ameboid movements. The endamebae may slowly change its position and move out of the field.

Where possible always examine the fresh specimen, but for those to whom this is not practical I will give the method of staining.

Staining. Many different methods of staining have their individual advantages for special purposes. But the best and most practical is the carbol-fuchsin and methylene blue stain for pus and exudates. The ectosarc stains more or less purple, while the endosarc stains varying shades of blue. The nucleus stains red. The endosarc will contain one or two red blood cells and usually a few bacteria.

Differentiation of Pathogenic from Non-pathogenic Amebae. The pathogenic amebae are larger than the non-pathogenic species, but otherwise resemble them very much in their appearance and general movements. The striking difference is that the pathogenic species phagocyte blood cells while the others do not. For all practical purposes this is the best differential point and the only one necessary. Amebae containing blood cells may be considered pathogenic organisms.

Interpretation. In active or acute amebiasis pathogenic endamebae can always be found upon proper examination. During the quiescent stage of the disease it may be impossible to find the endamebae because of the very small number present, and the absence of the kind of material in which they may be found. Therefore it may not be possible to determine from a single microscopic examination that a patient has not a quiescent amebic infection—but it is possible to determine whether an acute dysentery is or is not an amebic infection.

Hygenic Treatment. Any routine treatment indiscriminately given will probably fail. The general condition of the case, its duration, the presence or absence of complications, may call for varying remedial measures. As a general rule, if acute dysenteric symptoms are present, the patient should be put to bed, kept on a fluid diet of milk and eggs, and the pain and dysentery checked with opium or morphine.

Cases without acute symptoms, or when the acute symptoms have ceased, usually do not require rest in bed, and usually do better when on moderate exercise and full diet. The food should, however, be of such a character as not to leave much residue.

Drug Treatment. Ipecac has long been held as a specific in amebic dysentery as quinine in malaria. The ipecac may be given in doses from five to sixty grains per day. It should be given in salol-coated capsules.

The patient should be on milk diet and have complete rest while the ipecac is being given. The large doses are given daily until the endame-

bae disappear from the stools and then in five to ten grain doses daily for an indefinite period.

The results obtained from the administration of ipecac come from its active principle, emetine. Emetine given hypodermically will probably give better results than the ipecac treatment. The emetine may be given in doses ranging from one-half to two grains. I would advise you to begin with one-half grain daily, and then increase the dose to one-half grain three times a day. The treatment should be persisted until the stools are free from endamebae, after the administration of a dose of salts.

DISCUSSION

Dr. Cyrus Thompson, Jacksonville: In the giving of ipecac, I believe Dr. Warren said it should be given in salol-coated capsules. Perhaps in the form of tablets it is best. I use that put up by Eli Lilly & Co., under the name of Alcresta Ipecac. It does not dissolve in the stomach, never nauseates and is quite a definite improvement in the way of giving it. I had dysentery once. They gave me ipecac stirred in warm water, forty drops of laudanum preceding the dose by half an hour. Then they told me to lie still. It was effective; but I do not care at my age to take ipecac in warm water any more. I just make the tablet suggestion because you can get it easily, administer it agreeably, and it is thoroughly effective.

Dr. E. J. Wood, Wilmington: I would like for Dr. Warren to tell us whether it is well to begin the ipecac treatment at the bloody stage or wait until it has subsided.

Dr. R. L. Felts, Durham: Dr. Patrick Manson, I think, is an authority on tropical medicine. His method of giving ipecac in amebic dysentery is superior to any of the new methods. It is given in capsules, the patient being given a small dose of tinct. opium or deod. tinct. of opium, just before the capsules of ipecac are given, and instructed to remain very quiet in the bed. I have had quite a bit of experience in treating amebic dysentery by this method, and find that better results are obtained, than with any of the newer preparations of ipecac.

Dr. A. J. Warren, Salisbury: I would like to say that the sole idea I had in view when I wrote this paper was to stimulate the profession to look for amebic dysentery. I mentioned in the paper that if the acute symptoms do exist it is better to put them in bed and give them the opium or morphine first. I wish to thank Dr. Felts for his suggestion, it would probably relieve the nausea which might exist if opium was given before the ipecac.

THE INCIDENCE AND THE IMPORTANCE OF PLEURISY IN EARLY TUBERCULOSIS

P. P. McCain, M.D., Sanatorium

One of the most striking things in my sanatorium experience has been the frequency of obtaining from tuberculous patients a history of pleurisy at the onset or in the early stages of their disease. These pleurisies often occur months and sometimes a few years before commonly recognized symptoms of tuberculosis appear. They are usually spoken of as primary or idiopathic pleurisies, and are commonly considered as due to exposure or to a "cold which has settled in the side." The intensive studies in tuberculosis of the past decade have shown that practically all of these pleurisies are tuberculous; and the importance of their being considered and treated as such cannot be overestimated, since it is only the early cases of tuberculosis which offer a good prognosis for a cure.

It is not my purpose to try to prove that all pleurisies are tuberculous. Every one recognizes the fact that pneumonia is almost constantly accompanied by inflammation of the pleura; and the same is true, though less frequently so, in lung abscess, pulmonary infarct, malignancy and traumatisms of the chest, and very rarely also does pleurisy occur in the course of or following the acute infectious diseases, such as typhoid fever, scarlet fever and acute articular rheumatism. It is not with such pleurisies that this paper has to deal. But it is always wise, even when the cause seems so manifest, to keep in mind the possibility of their being tuberculous; for they may be caused by an awakening of a latent tuberculous focus as the result of the lowered resistance from the acute infectious disease.

Such an overwhelming majority of pleurisies are tuberculous, however, that every case should be considered as such unless it can be proved to be due to some other cause. Authorities now tell us that in the great majority of cases the cold, grippe or exposure, which was formerly considered as the cause of the pleurisy, merely serves to call forth the inflammation for which the membrane was prepared by the presence of tubercles.

Pleurisy occurs in early tuberculosis both in the dry form and with effusion, the former being by far the more common. By inoculation of the fluid into animals and by careful microscopic examination the tubercle bacillus has been proved to be responsible for as high as 60 to 85 per cent of pleurisies with effusion.

Such methods cannot be applied in dry pleurisy, but careful clinical studies have justified the conclusion that dry pleurisy is also usually tuberculous. A thorough chest examination will usually reveal an exist-

ing pulmonary lesion; a large percentage of dry pleurisies subsequently develop into active tuberculosis; and a large percentage of tuberculous patients give an antecedent history of dry pleurisy.

The fact that some of these cases do not subsequently develop active pulmonary tuberculosis does not disprove their tuberculous origin. Necropsies not infrequently show healed tuberculous lesions in many parts of the body, and at times even in the lung itself, of which the patient was never conscious.

Our records at the North Carolina Sanatorium show that of the 1,133 tuberculous patients treated, 469, or 40.5 per cent gave an antecedent history of pleurisy. In 134 of this number, or 11.8 per cent, pleurisy was the first symptom. Of this total number of pleurisies, 26 were pleurisy with effusion and 443 were dry. In the cases where the pleurisy was the first symptom 121 were dry and 13 were with effusion.

Carefully compiled statistics from other sanatoria show very much the same findings. Of 5,895 patients diagnosed as tuberculous at Phipps Institute, 23.8 per cent gave an antecedent history of pleurisy. The records of the Cook County Hospital for Tuberculosis show that in their patients pleurisy is the third most frequent initial symptom of tuberculosis. Pierce[2] reports two series of cases. In the first series of 1,767 cases of tuberculosis, 35 per cent, and in the second series of 518 cases, 52 per cent gave a history of previous pleurisy.

While pleurisy is frequently the initial symptom, the initial tuberculous lesion of which the pleurisy is the evidence, is rarely in the pleura. This initial lesion may be located anywhere in the body, but in almost all of these cases it is in the lungs; and a careful chest examination after the acuteness of the pain has subsided will usually reveal it. It is in the discovery of the location and the extent of this original focus and in the institution of the proper treatment for the underlying cause that the physician's main responsibility lies. In comparison to this the relief of the pain and the treatment of the other symptoms of the pleurisy itself are insignificant.

The diagnosis of the pleurisy itself is as a rule extremely easy. It is not necessary for the purpose of this paper to dwell on the diagnosis of pleurisy with effusion. The main conditions with which dry pleurisy is most likely to be confounded are intercostal neuralgia and herpes zoster, both of which are rare conditions. In the latter the appearance of the typical rash a few days after the onset of the pain will make the diagnosis clear. In intercostal neuralgia there are no constitutional symptoms, no fever and no friction sounds on auscultation. The pain is increased more on pressure and less on deep breathing and on coughing

than in pleurisy. In every case where pleurisy is even suspected it is extremely important to keep an accurate record of the temperature, taken at least three times a day—morning, afternoon and evening. The typical tuberculous curve, normal or subnormal in the morning and elevated in the afternoon or evening, will frequently reveal the underlying cause of the pleurisy. In severe attacks the fever is often continuous at first, but gradually becomes elevated only in the afternoon. Some of the other symptoms of early tuberculosis—malaise, tiredness, anorexia, indigestion, slight cough and slight loss of weight—may or may not be present.

The most frequent site of clinical pleurisy is in the lower half of the chest, and particularly in the axillary regions. But from a pathological standpoint, the most frequent location is at the apices posteriorly. Owing to the limited expansion of this portion of the lung, however, there is rarely any pain with pleurisy in this area and the condition usually goes unrecognized.

But, as stated above, the physician's real responsibility in every case of pleurisy lies in locating and treating the underlying tuberculous lesion. After the pain has disappeared he should examine the patient's chest most thoroughly. If he fails to find the lesion himself he should send him to a lung specialist. Those who can pay should be sent to the private specialist; and citizens of this State who cannot afford this expense can be examined without charge at the State Sanatorium by simply writing for an appointment.

Even when no lung lesion can be located, the patient should be told that the pleurisy was probably tuberculous. He should be instructed as to the early symptoms of tuberculosis and should be urged to keep an intelligent oversight of his condition. His work and his habits should be so adjusted as to keep his resistive powers up to their highest efficiency; and he should be instructed to report for examination every three or four months for the first year or two even though no symptoms of tuberculosis should appear.

With the exception of a pulmonary hemorrhage, no single symptom is so diagnostic of tuberculosis as pleurisy. And when it occurs as an initial symptom or early in the disease, it should be a blessing in disguise; for it not only tells the physician the nature of the trouble, but it also affords him one of the strongest possible levers in persuading his patient to take the proper treatment before it is too late.

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1. Diseases of the chest. Norris & Landis, page 528.

2. Relation of Pleurisy to Tuberculosis. E. A. Pierce, North West Medicine, March, 1917.

DISCUSSION

Dr. A. McNiel Blair, Southern Pines: The well-established factor of pleurisy as an initial symptom of tuberculosis is frequently overestimated. We, as physicians, are inclined to overlook and misinterpret other conditions where pleurisy is a factor, our best examples being cardio-vascular cases where a coexisting pleurisy is not an infrequent occurrence. The existing transudate of the coexisting transudative process is mistaken for the inflammatory exudative phase of pleurisy.

Malignancy of the lung offers another example. In leutic infections, because of the predisposition of the gummas to form in the pleural borders, a coexisting pleural involvement is a common accompaniment. To exemplify this latter phase, I had a patient during the past winter who had a condition which had been diagnosed as tuberculosis which was negative to all tubercular tests, including the sputa and complemental fixation; but with a positive Wassermann.

Again we have abdominal conditions with predisposition to diaphragmatic pleural involvement. So we may go down the line causing us to realize that while pleurisy is a strong factor, so it is often the beginning of tubercular symptoms or a tubercular involvement. We must first prove its existence by a process of exclusion rather than by the acceptance of the fact that pleurisy always spells tuberculosis. We must be constantly on our guard and by a process of exclusion attempt to arrive at the true character of the condition back of all so-called idiopathic pleurisies.

Finally, invariably there is associated with the pleurisy of tubercular origin a definite broadening of the broncho mediastinal glands, as evidenced by the radiogram or by the use of the fluoroscope, and which to my mind coupled with the other facts, is a most convincing argument of the true character of the existing pleurisy.

I feel indebted to Dr. McCain for his able paper.

Dr. P. P. McCain, Sanatorium: The only other point I wish to emphasize is that in early tuberculosis it is often very hard to impress upon the patient the importance of taking the proper treatment soon enough, because there is usually no pain. Tuberculosis is located in the lungs where one cannot see it, and usually he does not feel it, and in early tuberculosis he has very few other symptoms; but in pleurisy there is pain, his attention is called to his lungs, and if the physician takes the advantage which this pleurisy presents, he will have very little trouble in impressing upon the patient the fact that it is tuberculosis.

THE CLINICAL RELATION OF SYSTOLIC AND DIASTOLIC BLOOD PRESSURE IN THE DIAGNOSIS OF CERTAIN ACUTE CIRCULATORY CONDITIONS

Harold H. Newman, M.D., Salisbury

The trend of the medical thought of this age has been towards accuracy and precision. In diagnosis we have grasped for those things we could depend upon, those things of utmost differential merit. In desperate cases time is valuable, exactness is imperative and action must be prompt, or else, as the old saying, "The doctor buries his mistakes." Opportunity once gone, seldom presents itself again. To perform the high mission that has been bestowed upon us, it is necessary that we be overconscious of our task, ever zealous for truth and enlightment. We still have gangrenous appendices, when the surgeons tell us, that early diagnosis with the aid of instruments of precision and early operation, would make this condition a negligible quantity. New ideas are constantly given to the medical profession. These ideas must be investigated, our gains consolidated, things of no value discarded. Diagnosis still remains difficult and dependable aid is always invited. We, physicians must keep step with medical progress, or as one slow man retards the entire regiment, so our imperfections may lead us to discredit medical advancement.

We must be united in the search for truth. It was an attempt to render aid in a difficult problem, that led me to the work I wish to present this day. The stimulus for my efforts resulted from observing a patient collapse, following a simple short operation. The surgeon in despair, when desired results did not follow, at intervals, injected strychnine, atropine, digitalin, adrenalin and nitroglycerine. Had the cause of the collapse been known, adrenalin or nitroglycerine, or both, would have been unnecessary. Vasoconstrictors and vasodilators are not indicated at the same time. But time was precious, accuracy of diagnosis urgent, shadows of assistance were grasped for. Was the condition shock or could the already difficulties of a failing heart been augmented?

I thought a study of circulatory changes as revealed by the blood pressure instrument would be interesting and might be helpful in solving this difficulty.

The literature during the past few years has contained much on blood pressure. The methods for obtaining blood pressure have been discussed. Systolic pressure has been dealt with. Diastolic pressure has given origin to many diverse opinions. Hypertension and hypotension have had their exponents. The peculiarity of the aortic insufficiency

pressure—relatively low diastolic blood pressure and high pulse pressure —has been noted.

The greater number of writers agree that the auscultatory method for determining blood pressure is the most accurate and this is the most generally accepted method at present. The method is as follows—Auscultation over the brachial artery below the arm band, having first obliterated the radial pulse by the necessary pressure, gives different tone phases as the external pressure is slowly lowered. There are five tone phases. In the order of occurrence they are:

1. First phase—A series of clear tones or clicks.
2. Second phase—A phase of blowing murmurs.
3. Third phase—A phase of clear sharp tones.
4. Fourth phase—A phase of dull tones.
5. Fifth phase—The cessation of all sound.

Most, if not all, observers agree that the first of the series of clear tones or clicks, or the first phase, is due to the systolic pressure and that the diastolic pressure coincides with the point at which the clear, sharp tones, of the third phase, become suddenly and markedly dull—the beginning of the fourth phase.

HEART FAILURE, HEMORRHAGE AND SHOCK

There are certain acute circulatory conditions, namely, heart failure, hemorrhage and shock, which the clinician is called upon to differentiate and treat. The diagnosis at times is easily arrived at, but at other times is exceedingly difficult and imperative; for example, a patient with organic valvular disease of the heart, in the third week of typhoid fever, when there is a sudden four or five degree drop in temperature and an increased pulse rate (are we dealing with heart failure or hemorrhage?); collapse following operation, when there is a possibility of myocardial weakness and at the same time shock (is the condition heart failure or shock?)

The treatment in heart failure is directed towards *reducing* the heart load and such measures, as diuresis, purgation, venesection, and other things are resorted to. In addition cardiac stimulants, such as digitalis, strychnine, etc., are employed. In hemorrhage, normal saline solution is indicated, to increase the volume of blood. Shock is combated in many ways, but normal saline solution, adrenalin, along with the well known general measures, is the treatment used by many surgeons. This therapy is directed towards increasing the blood pressure and the volume of blood; and in doing so *adds* to the heart load. In treating hemorrhage and shock, the heart load is *augmented*, whereas in heart failure the load is *lightened*. One can easily see the peril of adding normal

saline solution or adrenalin in cardiac failure, as an already overburdened heart would be further embarassed. And according to Crile's theory, that shock is due to exhaustion of the vasomotor center from over stimulation and that strychnine is a shock producing drug, one runs a risk of using strychnine in shock, as it may further profound the vasomotor exhaustion. The correct diagnosis of these conditions is of utmost importance.

PHYSIOLOGY OF THE CIRCULATION AND DEDUCTIONS THEREFROM

Study of the circulation brings out certain theoretical factors that might be of aid in the diagnosis of acute circulatory conditions. The heart, a muscular organ, possessing the property of contraction, gives the power (the dynamic energy) necessary for the circulation of the blood. The arteries, a system of tubes, composed of connective tissue, smooth muscle, etc., possessing the property of elasticity, extensibility and contractility, serve as channels for the circulation of the blood. The veins similar in structure to the arteries, convey the blood from the arteries back to the heart. In the arteries between the beats of the heart, there is a certain amount of pressure—the diastolic pressure. This pressure is dependent upon peripheral resistance, elasticity, extensibility and contractility of the arteries and the volume of blood. Each contraction of the heart forces blood into the arteries and increases the already present pressure to a certain extent—the height of which is known as the systolic pressure. This increase of pressure is known as pulse pressure and is measured by subtracting the diastolic from the systolic and records the force of the heart contraction.

Further viewing the physiological properties of the circulation we find in exercise, (Shumacher & Middleton; *Journal A. M. A.*, April 11, 1914, p. 1136) the systolic pressure is increased to a greater extent than the diastolic pressure, and necessarily the pulse pressure is greater. (This shows the heart has a reserve power it calls upon. After prolonged exertion the systolic falls more rapidly than the diastolic and there results a decreased pulse pressure in the transition (Lowsley). These normal heart activities show greater fluctuation in the systolic pressure than in the diastolic, both in the increased and decreased efforts. In heart failure the disturbance points to the heart muscle, and one would infer that the systolic pressure controlled by power from the heart would fall to a greater extent than the diastolic pressure, controlled by other factors and that the resultant pulse pressure would be decreased.

In hemorrhage a condition affecting mainly the volume of blood, it would seem that the diastolic pressure, dependent upon peripheral resistance and the volume of blood, would fall to a greater extent than the

systolic pressure, so long as the heart received a sufficient quantity of blood to work upon. The state of the circulation in hemorrhage might be compared to the state in aortic insufficiency. In aortic insufficiency, the relatively low diastolic pressure and large pulse pressure are well known. In each condition, there is a leak, so to speak, which affects the volume of blood and would decrease the diastolic pressure more than the systolic, as the dynamic properties of the heart would not be interfered with, (so long as the coronary arteries supplied blood to nourish the heart musculature) and would give an increased pulse pressure.

Shock is a depression of the vital powers arising from an injury or a profound emotion acting on the nerve centers and inducing exhaustion or inhibition of the vasomotor mechanism (Dacosta), shock is exhaustion of the center (Crile). The circulation in the state of vasodilitation would seem to decrease the diastolic pressure to a greater extent than the systolic pressure, for here we have a condition affecting the contractility of the arteries and involving little if any the heart musculature. In this state the resultant pulse pressure would seem to be increased.

In other words, it would seem that by following cases likely to have heart failure, hemorrhage or shock, there would be a fall in the blood pressure in the acute state, that would be indicative of heart failure, when there is decreased pulse pressure and of shock and hemorrhage, when there is increased pulse pressure. (Shock and hemorrhage can be differentiated by utilizing red blood cell counts and hemoglobin estimations, in following the case (Hare).

THE SCOPE OF THIS WORK

I thought it would be interesting to make systolic and diastolic readings upon cases that might eventually have one of the above circulatory conditions. I hoped to ascertain the changes in blood pressure that would occur during such a state and was eager to know if the above theory would be borne out.

The scope of this work entailed much unnecessary labor, we had to follow many cases, in order to obtain records of a few acute conditions. We endeavored to make readings at the same hour daily, but this, owing to lack of time, was impossible. We made readings more frequently during the acute condition.

In this work we used the auscultatory method, as described above and read the diastolic pressure at the point where the clear, sharp tones of the third phase became suddenly and markedly dull—the fourth phase. We would obliterate the pulse three times—to allow for arterial spasm—and then would read the pressure. We recorded the pulse rate at each observation.

CASES SHOWING FALL IN PRESSURE WITH DECREASED PULSE PRESSURE

In our work we observed cases showing a fall in blood pressure associated with decreased pulse pressure:

CASE 1. H. H., age 42. Dilated aortic arch, aortic insufficiency, myocardial insufficiency. Two days before death the systolic pressure rose to 172; diastolic pressure was 46; pulse pressure was 116. In the next two days the dystolic pressure fell to 82; diastolic pressure to 28; pulse pressure to 54. Pulse pressure decreased from 116 to 54.

CASE 2. S. P., age 23, female. Malignant endocarditis, aortic insufficiency, mitral stenosis, mitral insufficiency, myocardial insufficiency. The day before death the systolic pressure rose to 122; diastolic pressure was 36; pulse pressure was 86. In the next twenty-four hours the systolic fell to 45; while the diastolic fell to 24; pulse pressure 21. The pulse pressure decreased from 86 to 21.

These were definite cases of heart failure. The increase in systolic pressure, in both cases, just prior to death was very interesting, probably indicating the total heart power. When the limit of the heart power was reached cardiac failure resulted and death soon followed.

CASE 3. J. G., age 59. Arterial sclerosis, strangulated hernia. Before operation the systolic pressure was 152; diastolic pressure 90; pulse pressure 62. Thirty minutes after operation, while still under the effects of ether, the systolic pressure was 146; diastolic pressure 84; pulse pressure 62. Two days after the operation the systolic was 120; diastolic 90; pulse pressure 30. This shows pulse pressure change from 62 to 30 following the operation. The patient was very weak, but no other symptoms developed.

CASE 4. Mrs. H., age 56. Fibroid tumor of the uterus. Before operation the systolic pressure was 210; diastolic 94. Pulse pressure 116. Two hours after the operation the systolic pressure was 154; diastolic 88; pulse pressure 66. The pulse pressure fell from 116 to 66. The patient was very weak, but no other symptoms were observed.

We feel that the blood pressure findings in the last two cases indicated weakening of the heart, and that in such cases, normal saline solution and adrenalin are contraindicated.

CASES SHOWING FALL IN PRESSURE WITH INCREASED PULSE PRESSURE

Our cases that showed fall in blood pressure with increased pulse pressure were hemorrhage cases.

CASE 5. D. H., age 21, Typhoid fever. On December 19 the systolic pressure was 120; diastolic pressure 90; pulse pressure 40. On December 24 the pulse rate increased and the systolic pressure was 102; diastolic 40; pulse pressure 62. The following day the stools contained much blood. The pulse pressure increased from 40 to 62. The blood pressure findings gave much earlier indications than the hemic stools, as to the condition to be dealt with.

CASE 6. M. D., age 66. Hypertrophied prostate gland. The blood pressure

findings are noted on separate chart. After operation the systolic and diastolic pressures fell and there was a slight decreased pulse pressure. Then in the course of one day the systolic pressure went up to 134 and the diastolic pressure to 112, pulse pressure 22. On the following day there was considerable hemorrhage from the prostatic cavity through the suprapubic incision. The systolic pressure rose to 144, whereas the diastolic pressure fell to 95; pulse pressure 49. The pulse pressure increased from 22 to 49.

We were unfortunate in not encountering any cases clinically diagnosed as shock. This we regret, as likewise the small number of cases we report, but we wish to call attention to this work, hoping that others might see fit to make observations along this line and eager to know whether or not our ideas regarding the circulation in heart failure, shock or hemorrhage will be proved or disproved.

SUMMARY

We believe that a fall in blood pressure associated with decreased pulse pressure is indicative of heart failure; whereas a fall in pressure associated with an increased pulse pressure is indicative of hemorrhage or shock.

The cases that we have observed seem to adhere to this theory.

CONCLUSIONS

We realize that a large series of cases are necessary to prove this theory.

We feel that slight changes in the systolic and diastolic relation are not to be relied upon.

Cases should be observed frequently, in order that the state of the circulation be understood. Knowing the previous state of the circulation a fall in pressure should be carefully studied, in order that proper interpretations of the changes be made.

We would urge that the systolic and diastolic blood pressure be taken on all surgical cases, before, during and after the operation. Such finding in our opinion might be of service in the diagnosis in circulatory crises. We would further urge that blood pressure readings be made on all cases likely to have acute circulatory condition.

DISCUSSION

Dr. P. R. Hardee, Stem: I notice Dr. Newman recommends purgatives, bloodletting, etc., in cases of heart failure. I have failed to see any indication for these remedies in cases I have diagnosed as heart failure. Per contra, I see indicated such remedies as caffeine, spartine, strychnine; and, if symptoms are alarming, I give spirits camphor, inhalations of ammonia, etc., until alarming symptoms are over.

In Case 1 Dr. Newman relates a fall from 172 to 82 in systolic pressure, while the diastolic remained practically the same. This was a case of terminal heart failure and shows the arteries held out longer than the heart.

Case 2, also terminal heart failure, shows the heart and arteries failing at the same time. I do not think the relation of systolic to diastolic pressure in terminal failure shows anything more than illustrated in these two cases, *i. e.,* the heart may fail before the arteries, or they may fail at the same time, and perchance the arteries may fail first and give a very large pulse pressure. I think these cases of terminal failure have very little value in the clinical study of blood pressure.

The point I wish to emphasize most in this discussion is not one spoken of in any work I have examined on blood pressure, and this is the relation of high blood pressure to rupture compensation of the heart. Before the advent of the sphygmomanometer in general practice we thought all these cases of ruptured compensation were caused from cardiac degeneration in some form, but we know now that it is possible to have ruptured compensation in a perfectly sound heart.

I may not be able to explain this phenomenon to your satisfaction and will relate a case. A few years ago I was called in passing to see a colored woman. I found her suffering with all the symptoms of ruptured compensation of the heart. Not having the blood pressure instrument with me, I prescribed digitalis and other remedies as indicated in her condition. Seeing her husband a few days later, he informed me that his wife was very much better. Feeling sure that my diagnosis was correct, I instructed him to continue the treatment. A few weeks later I was called to see her. From the diagnosis as related above, I naturally expected to find a low blood pressure as is usual in cases of cardiac degeneration, but, on the contrary, the systolic pressure was 240 mm. Since this experience I have frequently noticed ruptured compensation and high blood pressure. I believe that a blood pressure of 200 mm. or over maintained for a considerable time will rupture the compensation of most hearts. I rarely find these high pressures without ruptured compensation.

PRESENT MEDICAL CONDITIONS IN NORTH CAROLINA

H. D. Stewart, M.D., Monroe

There are many things connected with medical practice in our State that would be extremely interesting for discussion under this broad, general head. Under several subdivisions I shall discuss briefly medical progress as it exists at this time.

DIAGNOSIS

The average family physician is short on diagnosis.

A patient is brought before you for diagnosis.

No patient is too innocent to have syphilis or tuberculosis. Always eliminate tuberculosis first; then syphilis; then malaria; then nutritional troubles or disturbances of metabolism.

TYPHOID FEVER

There is no excuse for the existence of typhoid fever in North Carolina now, except a dual, mutual ignorance of the medical profession and the laity. It is well nigh a disgrace to have any more cases of typhoid. Antityphoid inoculation should be made universally compulsory throughout the State.

The profession should have special instruction as to the cause and diagnosis of typhoid fever. Not over twenty-five per cent of the profession know how to manage and to successfully treat a severe case of typhoid.

Very many cannot diagnose it from malaria, tuberculosis, lagrippe and some other febrile conditions.

HOOKWORM

The other day I was sitting at my desk with pencil in hand and a wise look, thinking how suddenly hookworm had disappeared from North Carolina and other Southern States when the Rockefeller allowance was withdrawn or exhausted.

I dare say there are hundreds of cases of hookworm existing in North Carolina unobserved, undetected and unlocated. They are passed up as tuberculosis, anemia, indigestion, etc.

BRIGHT'S DISEASE

From an etiological standpoint, Bright's disease may be classified under four heads:

1. Those due to alcoholism.

2. Those due to syphilis.

3. Those due to autointoxication, or chronic protein putrefaction or nitrogen narcosis, or to carbon or marsh gas narcosia.

4. Those due to or secondary to the exanthemata, or to other infectious diseases.

Bright's disease is essentially a disease of the blood vessels. When the vessels begin to lose their elasticity, the blood pressure rises and dropsical effusion begins.

Why have we not made more progress in the treatment of Bright's disease?

Early diagnosis of the disease and of its cause and the early treatment are extremely important.

We have progressed in the prevention of Bright's disease only so far as prohibition of the liquor traffic has progressed; only so far as we have taught the public about the evil effects of venereal diseases; only so far as we have taught the people that the meat, grease, and sugar which predominate in the menu of the average hotel will cause traveling men to have Bright's disease; that too much animal protein will harden the arteries, stiffen the muscles and joints and prostrate the nervous system.

We have prevented Bright's disease only so far as we have taught parents that measles and scarlet fever are serious diseases and never to be taken lightly.

PNEUMONIA

Pneumonia may be classified as lobar or lobular; as primary or secondary; as streptococcic or diplococcic; as due to a mixed infection; as tubercular.

The diagnosis is not easy. The treatment has not improved very much for the past seventy-five years. The disease results from clogging the machinery within—from checking internal secretion and active elimination.

It is essentially a congestion of the small blood vessels and of the mucous membrane of the lungs.

Too much protein; too much retention of waste; too much carbon and too little oxygen; the surface chilled and the center congested; the presence of streptococci, diplococci or tubercle bacilli in the throat and bronchial tubes—all these things contribute to the cause of pneumonia.

A large majority of deaths reported as due to pneumonia are in reality due to pulmonary tuberculosis.

SUMMER DIARRHEA OF INFANTS

Ah! we have one of the most difficult troubles in the entire field of medicine to handle.

In this trouble, an ounce of prevention is worth even nine pounds of cure.

After the little patient has become wasted and relaxed and his vitality has passed beyond a certain point, all the expert baby specialists in the world must stand by the bedside and look on in vain. Medical science is lost. Dame Nature's resources are exhausted. The child must die.

Experimentation is worth little. Consultation is worth nothing except to console the mother.

The best way to treat most sick babies is to treat and to educate the mother.

Exhaustion of the mother makes bad milk. Bad food, worry, constipation and absence of will power and of hope—all make bad milk.

Sudden emotion, anger, fright, extremes of heat and of cold make and cause the most deadly toxins in mother's milk.

It is true of mares and it is true of the human mother.

What progress are we making in handling diarrheas in infants?

These troubles must be checked by wise, correct measures in their early stages.

CANCER

The causes of cancer may be divided into three—bacterial infection of local areas; local irritation prolonged for some time; hereditary tendency.

A learned cancer surgeon from New York declares that there is nothing hereditary about cancer. His opinion will not hold. There are in Union County thirty or more cancer families, in which cancer may be plainly traced from one generation to another. The disease itself is not hereditary, but the cell liability is hereditary.

After having inquired carefully into the family histories of more than two thousand applicants for insurance and private patients, I have been able to trace the disease from one generation to another.

TUBERCULOSIS IN NORTH CAROLINA AND IN THE TRAINING CAMPS

It has been said that ninety per cent of all people have tuberculosis some time in life; that everybody is crazy some time in life.

The statistics of autopsies are said to prove this contention in regard to the prevalence of tuberculosis.

There are thirty-eight thousand people in Union County. I'll venture

to say a thousand or more of these have tuberculosis—either active or dormant, apparent or obscure.

If all the people of every county were thoroughly examined from head to foot by experts in the diagnosis of tuberculosis, and all family histories could be fully and accurately obtained for four generations, the findings would be alarming.

I believe more people die of tuberculosis than of all other diseases combined.

Thousands upon thousands of death certificates are signed upon false diagnosis when the deaths are really due to tuberculosis.

We observe that nearly all the deaths in the military camps are attributed to meningitis or to pneumonia. Some of these cases of meningitis are tuberculosis.

A large majority of the cases of pneumonia in the camps are of tuberculous origin and in reality are only cases of pulmonary tuberculosis.

Practically all cases of spasmodic asthma, or all cases not due to renal insufficiency or to failure of cardiac compensation, are due to tuberculosis.

A person with quiet tuberculosis may be walking around in apparent health today. From some depressing influence or environment he may fill up with tuberculous pneumonia and die in less than three days.

Cigarettes, dissipation, excessive heat or excessive cold, or depressing trouble may give the disease a chance to finish him.

VENEREAL DISEASES

What are we doing to rid the State of venereal diseases?

Very little.

Venereal diseases should be made reportable.

Every individual with a venereal disease should be examined, recorded, and the balance of the race protected against him until he has an absolute cure.

If he is guilty, he should be looked after in time for the sake of public safety.

The United States Government is going to have to keep a more complete record of its civil population.

There are too many people running at large with no purpose in life, no plans for the future, nothing stable or reliable, nothing fixed or permanent, no useful productive occupation, with pastimes and pleasures, with liberty of unrestricted marriage, with every opportunity to sow the seeds of venereal diseases and of tuberculosis broadcast.

Universal education is the only hope.

A large civil draft is greatly needed.

It is just a question of time when the government will undertake the education of all classes according to their several abilities.

SANATORIA

The sanatorium will never solve the consumption problem. There can never be enough sanatoria built to take care of one-tenth of the cases.

Then, too, there is the ignorant doctor who talks his way through the world, or politics, or handshakes, or smiles, or pretends, or copies, deceives, or marries his way through. He would not know a case of T. B. if he were to meet it in the road.

No man should be licensed to practice medicine who is not thorough in anatomy, physiology, pathology, history and diagnosis of this, the most important disease on the face of the earth.

There is absolutely only one way to root out tuberculosis from the face of the earth. That is to teach every man, woman, girl, boy and child what tuberculosis is; how it spreads; how to recognize it; how to avoid it; and how to cure it.

Every township of every county should have a district health nurse who is an intelligent, wise, energetic leader in health work.

Tuberculosis on account of slow diagnosis becomes essentially a chronic disease.

No observer has ever yet been able to determine the exact period of incubation or of invasion. The initiation of the disease is insidious.

Tuberculosis from the very nature of things is necessarily expensive. But many so-called experts, operating sanatoria for consumptives, have made it entirely too expensive by pretending to furnish some secret wonderful remedy when the fact is the patient gets only mountain air, milk and good nursing.

All these things are discouraging for the consumptive and his family to contemplate. He and the family, too, are inclined to give up hope at the beginning; and when hope is gone, all is gone.

We should take the humanitarian view and try to help the consumptive in every possible way.

OUR MARRIAGE LAWS

We have none.

An idiot may marry an idiot and beget a State charge, a county charge or a family care.

A criminal may marry and beget a social menace or a recruit for the penitentiary.

A syphilitic or an alcoholic may marry and beget a defective or a criminal.

Practically every large family in the United States has a defective, an invalid or a criminal. These are a care to the family or to the State.

All these products have sprung from unwise, unselective, unscientific, uneugenic marriages.

You cannot raise thoroughbred people without a careful, practical study and application of blood strains and of mating.

THE DOCTOR AS A BUSINESS MAN

The average income of doctors in the United States is seven hundred dollars a year.

Why is this so?

The doctor, as a rule, is the poorest business man in the world. He is a poor bookkeeper. He is a bad investor, being duped time and again by fake mining companies and other sellers of worthless stocks. It is a pretty safe policy for the doctor to tell any seller of stocks right at the outset to go to the devil. Book agents might also be invited.

What equipment should the doctor have?

A good literary education, because he is to be a leader. He is to be the physician, the priest and the potentate.

He should be a thoroughly trained medical man. It is better for the profession, as well as for the public, if his work can be handed down from one generation to another, each generation taking special pains for the training and equipment of the next generation.

The doctor should be a man of health and constitution. Invalids do not appeal to the sick.

He should be a man of honesty, integrity, sincerity, without pretense or sham—in short, a man of reliable, dependable character.

He should have a well equipped office; examine his patient or his patron thoroughly and intelligently; be able to give real valuable service and then not hesitate to charge a living wage.

His mind, his eye, his ear, his finger and his heart should be accurately and thoroughly trained.

We need more great teachers in this country. We need a training school of great teachers for the medical profession.

There are too many doctors and too many lawyers.

With good public health work, good sanitation and liberal education of the people in health matters, one good, well-equipped doctor can do all the legitimate medical practice of twenty-five hundred people.

Four or six good lawyers can do the legitimate legal practice of a whole county.

THE QUACK IN THE REGULAR PROFESSION

There are more quacks and fakers in the regular licensed medical profession than there are outside.

How can we of the regular profession suppress quacks and pretenders when we seek cheap notoriety, use questionable methods; use remedies, treatments, oxygen machines and all manner of deceptions, which appeal to the ignorance or vanity rather than to the intelligence of our patrons?

We still have a few fellows in North Carolina who are making their living inducing or initiating criminal abortions.

We should frown upon them instead of signing petitions for executive clemency when one is caught.

There are fellows in the medical profession in North Carolina who can make any old life insurance examination by mail, on the street, in a crowd, or make it miles away without ever seeing the applicant.

There are doctors right in Union County who will write six prescriptions for one patient without any examination at all. What is that but quackery and patent medicine vending?

Shotgun prescriptions are a sure sign of ignorance. The doctor is gunning without knowing which tree the bird is in or on which limb he perches.

The competent expert medical man and diagnostician give very little medicine.

The more medicine a doctor gives, the less he knows about what he is doing. And giving medicine just for the psychological effect is dishonest and criminal.

When a druggist begins to try to drum up practice for a doctor you may well know there is something rotten up the creek. The doctor and his druggist friend are going into the business of quackery.

For purposes of commerce they are going to fill stomachs, mantels, cabinets and closets with expensive medicines that will never be taken.

We still have a few fee-splitters. An ignorant, crooked doctor acting together with a crooked surgeon can take strictly medical cases to the hospital, have an operation and split the fee. I had rather a man would break into my house at night than to break into my body and remove a normal organ or any part thereof; and then break into my pocket and take my pocketbook.

It takes a good, strong, honest medical man to hold down the average surgeon.

Sometimes it takes a good, strong surgeon to pull the average medical man out of the hole into which ignorance of differential diagnosis and unnecessary delay have drawn him.

A medical institution near our county has done the medical profession a great injustice. It has lowered standards and done damage that cannot be removed in a generation. The conditions are deplorable.

There are a number of men in our county who went to Davidson College and to Charlotte and quizzed and quizzed before they ever passed. Some of these have no ethics; no standards.

What is the use for a man to study the classics, philosophy, history, higher mathematics and chemistry, if he is to be placed on a par with a fellow from the blackjacks who has never seen inside of a laboratory, a medical college or a large hospital?

STATE MEDICINE IN NORTH CAROLINA

The State Board of Health is doing good work. But it could do much more good as a strictly non-political body. In proportion as it drifts into political ways will it drift out of harmony, confidence and coöperation. Our secretary is all right in every respect.

But as long as a politician can get on the Board by inviting the Governor to a school closing, entertaining him at dinner and then having a friend of his to suggest to the Governor to appoint him on the Board, so long will there be a certain lack of confidence and coöperation on the part of the medical profession.

OUR SCIENTIFIC MEETINGS

I am sorry indeed that our State Society is trying after the fashion of the American Medical Association and the Southern Medical to divide the program into sections with a handful of men here and there trying to hear what he can while he is compelled to miss the best in other sections.

The surgeon needs to hear the medical man and the medical man the surgeon. The eye, ear, nose and throat man needs to hear both. No specialist can become an expert in his department until he has first obtained an accurate general knowledge of medicine.

I am of the opinion that the State Society should have a program commission to arrange a symposium for each important department; to arrange for about six able, well-prepared practical papers for each department and have all departments in the same hall or auditorium.

I love my State Society. It is dear to me. Two things draw me to the meetings—to see my friends and to attend the scientific meetings. My greatest pleasure comes from attending these meetings.

But for Heaven's sake, let the Nominating Committee, if they want to be honest and sincere, place the meetings with an eye single to the convenience and the welfare of the medical profession of North Carolina rather than to suit a few politicians or any railroad, hotel, city or section.

THE NOMINATING COMMITTEE

Many physicians over North Carolina have complained of the evil effects of the pernicious politics of ten or a dozen members of the State Medical Society. I know it to be a fact (because I have heard many of the doctors say so) that many doctors do not attend the meetings and do not take a lively interest because a bunch of ten or twelve so-called leaders have an organization by which they get each other placed on the Nominating Committee so that they can manipulate the meeting places, the important offices, etc.

Some of them have brass enough to hold all the important offices in regular order, without the consent of the democracy; sometimes they hold two or three at once.

The effect upon confidence and coöperation are very apparent.

They are just as dangerous to democratic ideals and principles in their little spheres as the Kaiser is in his large domain.

You all know who they are. There are about three in each district.

I dare say it costs the average physician from a hundred to one hundred and fifty dollars to attend the State meetings.

It costs the politician, the salaried man or the runabout nothing. He has all to gain and nothing to lose.

Our fight for worldwide democracy extends from the home to the school, to the Municipal Government, to the State Government, to the National Government, to the Church, to the State Medical Society, to all social castes and conditions.

There are Kaisers everywhere. The fight is on and it is not limited to Germany.

I despise any man or set who try to profit or thrive, or gain by the sufferings, poverty, ignorance, blood, life or death of others.

I abhor a usurper, a pillager, a plunderer, a defrauder, a rogue, a thief.

Politics, war and dishonest commercialism are all of the same family.

There is civil war and business strife in every community—all due to selfishness.

The world is looking for a conscience. It is seeking men and women who may be safely trusted without the fear of disappointment or reversal or embarrassing surprise.

I have absolutely no confidence in a crooked self-seeking politician. He can become the deathknell of any society, church, Farmers' Union or anything else in which he is the chief moving factor.

DISCUSSION

Dr. Romulus Armfield, Marshville: I want to speak of Dr. Stewart's paper just a minute. The subject of tuberculosis. Now the great

harangue about tuberculosis, we do not take it in its early, primary state. There is one thing I would like to ask this Society of North Carolina. To know a man is going to die is poor consolation. Feed him and he will get well, and if there is one thing that every doctor has learned will keep people from dying with tuberculosis and that is not to freeze them to death. Right here in Sanatorium there was a man with tuberculosis. If he had stayed long enough he would have frozen to death. He went to Charlotte and in three days he was dead. Take a man emaciated and half frozen to death, give him a cold bath, that will kill him. There is one thing a lot of doctors have learned and do not grasp, what a man's nose is made for. Some think to smell with, some to root with. I congratulate myself and the President of the Society that we have got a pretty good noseology, but that nose was put there, according to my notion to warm the air before it went into the lungs. We have gone crazy about fresh air. Some think you must let a man freeze to death. Whenever you physicians blow hot air like Dr. Cyrus Thompson and myself, then you will solve the problem. Give a man fresh air, but don't freeze him to death.

Pneumonia; that is another freezing disease; twenty grains of calomel at a time and then let him die. You let them die with heart disease; you simply let the circulation go on to 130 beats till the crisis comes. Down he goes; then you go to work when he is dead. If I just in a few minutes could save one man's life I would think I had fought a good fight. When as many men die with pneumonia as do, I will verify my assertion. You give me three patients with pneumonia, and I will pay that doctor's bill; I will wait on it and I will assure the widow, I can get it mighty quick. Ninety per cent of the cases of pneumonia would get well if not complicated with tuberculosis, if properly treated. I can prove that the deaths from pneumonia are greater than the statistics we see in the books. A man dies with pneumonia—I would rather have my live man with a plaster around his side than be a corpse. If a man escapes with his life without freezing to death, it is reported everywhere. If he happens to die, why not let it be known?

SOME PHASES OF MEDICINE IN THE PAST, PRESENT AND FUTURE

F. E. Asbury, M.D., Asheboro

While extending my thanks to you for assigning to me one of the pleasant duties of the hour, and embracing an opportunity to recall a few of the achievements of medicine in the past, and the influence of the past

upon the present, I almost confess to a preference "for letting the dead past bury its dead," and for acting in the living presence.

Never in the history of time has the present been so replete with absorbing problems; never has it been so rapidly relegated to the past; never has today been followed so swiftly by tomorrow. Theories just advanced are immediately abandoned for their successors, and the question may well be asked, Where is the past? is there a present? and what is the future?

The intellectual activities, the changing opinions, the multiplying truths of the closing years of this nineteenth century make us wonder whether the investigating mind can pause sufficiently long to ascertain its relation to the present, the past, the future. But were I to shrink from what might be termed the stigma of being a reconstructionist in the graveyard of oblivion, and of unearthing exploded theories, failures in diagnosis, errors in judgment, and absurd therapeutics, it is gratifying to know that the present is only a visible step in the great invisible and ascending staircase of progress. The past, to which the present owes its existence, contains what has been proven and ultimately adjudged as right or wrong. Its errors have been varied and are exhumed only as curiosities. While its established truths are beacon lights, whose rays, fixed upon the shores, penetrate beyond the present, into the infinity of that ocean of knowledge so extensively, and yet so imperfectly explored.

The occasion is not suitable, and the time is wanting for a complete and scientific treatment of my subject, and I shall only run lightly and rapidly over the past, and present to you some of the lights and shadows scattered along the way. For obvious reasons it is best to hurry through the darkness and then stroll through the daylight.

Medicine has its benighted side. It confesses to incantations, ignorance, superstition, imperfections, and errors; it acknowledges its companionship with false ideas, and with a sickly smile does not deny that one of the names applied to its votaries coincides exactly with that of the ungainly bloodsucker which the physician sometimes employs at the present day to reduce local inflammation. What a sad reflection it is that physicians were at one time conscientious in withholding water from the fevered patient who with trembling pulse, parched tongue, hot skin, aching head and glazed eyes, cried out in vain for that cooling and refreshing handmaiden of nature, whose aid we are now constantly evoking! It is sadder still to recall the dungeons, the chains, the cruel banishment, the pitiful wails of anguish which entered into the lives of many who in the dark ages, were bereft of their reason.

Even the so-called unfeeling surgeon shudders when reading in the old text-books of the operations performed with crude instruments, veritable

engines of torture upon patients who could not sleep under a pain-annuling anesthesia. Assistants were plentiful, but the number of those who held the patients had better not be stated. Although the illustrations have been handed down none of us are especially thankful to the artist or proud of the scenes which they have depicted.

There is, I venture to say, some one not a mile away who would hesitate to drink water after a dose of calomel; who would remain indoors a whole day after rubbing the chest with spirits of turpentine the night before; who would endeavor to arrest hemorrhage from a vein by applying a ligature between the wound and the heart; or who would rub a contusion with nothing but a silver spoon in order to promote absorption of the bruised blood. Our dispensary physicians will occasionally see upon the top of a patient's head a tuft of hair tied very tightly in order, as the saying is, "to raise the palate up." In this connection the temptation is irresistible to restate an incident the truth of which can be substantiated.

One of my acquaintances, an aged female inhabitant of the upper part of Moore County, was taken sick and summoned her brother-in-law, himself quite aged, to diagnose and treat her malady. The old man, with becoming gravity and without observing the pulse, respiration or temperature, informed the sufferer that her lights were too high. "What you goin' to do?" asked the patient with a searching glance. "Sister," replied the mature doctor, "taint but one thing to do, and that is to swallow nine shot, and make the lights slip down." Gravity in diagnosis and gravity in treatment, the trusting patient swallowed the shot, and was cured.

These digressions are made only as a justification for touching upon the present, when dealing with the superstition and the ignorance of the past.

It may not be amiss to quote from celebrated authors, Cato advised his son to beware of all physicians, asserting that he had formulated a system of rules by which he and his family could be preserved; but Plutarch, his biographer, adds that his self-sufficiency went not unpunished, for he lost both his wife and his son. "You are a physician," said Louis IV to Molier. "What does he do for you, sir?" responded Molier. "We chat with one another, he prescribes medicine for me, I do not take it, and get well." It is doubtful whether the words of Voltaire ought to be quoted. For he described a physician as one who put drugs of which he knew little into the stomachs of which he knew less, for the cure of diseases of which he knew nothing. Said the author of the *Autocrat*, "I firmly believe that if the whole materia medica could be sunk to the bottom of the sea it would be all the better for mankind, and all the worse for the fishes."

Medicine does not deny the validity of many a criticism passed upon

its imperfections, but it receives a good measure of consolation from the fact that fullness of knowledge in any science cannot be attained at once, and that seekers after truth are not always censurable for the helplessness and the failures of ignorance.

With these truths as a background, and reminding you that the shadows fall only where the light has been intercepted, I turn to another side of the picture. Is not the past worth recalling? Are there no treasures to draw from its storehouse?

Will you permit me to make a final comment? I wish to refer to the family physician who, I fear, is either in the past, or will soon be laid away in its recesses. I do not underrate the specialists, for their development of medicine in special lines is beyond computation; nor am I speaking as a suppliant for favors in behalf of the old-time doctor; but would it not be well for us to reflect a moment and ascertain whether we have not consigned too much to the past? Was there not one whose social intercourse with his case enabled him to detect the incipiency of disease; whose kindly influence and firm but gentle control over the children added largely to the efficacy of his measures when they became ill; and whose presence was regarded not as an intrusion or a dread, but under all circumstances as a benefaction? I enter a plea for him who as the friend, the counselor, the comforter, the physician, of the family, was the first to receive them all into the world of which he knew so much and they so little, who studied their constitutions in health as well as in disease, and was all the better qualified for this reason to treat them judiciously; who watched over them and cared for them as they emerged from infancy into childhood, youth, and adult age; who became a father to them after his ministration to the parents were at last unavailing, and who, when he, himself, had been gathered to his fathers, was borne to his resting place, by those by whom he had lived, suffered, and perhaps died.

The times have changed, and if the family physician be a thing of the past, let us remember, at least, who and what he was. I love to dwell on their self-sacrifice, their adherence to principles, their devotion to truth, their humility, their courage, and the calm indifference and fortitude with which they bore the adverse criticism of the ignorant, unsympathetic, inconsiderate, and unappreciative world to them was not given to attain perfection; and who more than they could have regretted the incompleteness of their knowledge in a science whose object is the alleviation of suffering and cure of disease. They have not lived in vain.

We are and shall continue to be their debtors; and while we exalt the present and look with longing eyes into the future, let us do becoming honor to those who have laid the bricks, as well as to those who have laid

the cornerstone of the great structure which is still building and to which the workmen of the present have so materially added.

We cannot feed those who died from hunger. Let us raise, however, a monument of stone gracefully proportioned, firmly planted, towering high, defiant of the storm, and containing, not a record of their deeds, but the words of Schiller, "Your deeds are known in words that kindle glory from the stone."

ANGIONEUROTIC EDEMA, A CAUSE OF HYDROTHORAX

Ben. H. Hackney, M.D., Bynum

While angioneurotic edema has been variously described in ecclesiastic and other literature since the earliest times, its particular study has become exact only since the description of Graves in 1848, which was more thoroughly impressed upon the profession's attention by Quincke in 1882. The description was so classical that it has since been commonly known as Quincke's Disease.

A large number of observers such as Osler and Matas have since conclusively demonstrated the disease to be closely associated with the disturbance of nerve processes.

The report of this case showing angioneurotic edema a cause of hydrothorax may be looked upon as a misnomer. This case is reported to show that angioneurotic edema may cause effusion in serous cavities when associated in such regions as well as edema.

Case. Fannie C., colored, 11 years old, came to me August 3, 1916, for a swelling of the right side of the face, neck, and both hands, which occurred suddenly without prodromes other than general discomfort, loss of appetite and chilliness of the extremities. Family history was good except her mother had similar attacks of swelling which never lasted more than two days. Personal history very good. Examination showed a colored girl well developed and well nourished. Right side of the face, neck, and chest, and both hands were swollen. She showed to be nervous and all her reflexes were exaggerated. Temperature, 99; pulse, 80; respiration, 19. Heart and lungs normal; abdomen distended and tender. She was given a strong purgative, and the swelling and all symptoms subsided in twenty-four hours.

I was called to see this girl August 24, 1916, for the same trouble associated with constipation, abdominal pains and shortness of breath. Examination showed a pronounced swelling of both hands, the entire face, the right side of the chest and the genitals. The swelling was tense, but pitted on firm pressure. The abdomen was distended, but no areas of tenderness were found. The patient was nervous and all reflexes exag-

gerated. Temperature, 99 1-10, pulse, 90; respiration, 40. Examination of the chest showed a marked swelling of the right side with absence of expansion. The left side showed absence of swelling with exaggerated expansion. Apex beat elevated and displaced to the left of the left nipple line.

Palpation showed a deficient expansion on the right side and increased on the left with the apex beat in the fourth interspace just to the left of the left nipple line. Tactile fremitus and voice vibrations abolished on the right side. Percussion showed the heart to be displaced to the left and slightly upward, but not enlarged. Left lung normal. Absolute dullness on the right side to the fourth rib anteriorly and the third posteriorly. Below the dullness passed without change into that of the liver.

Skoda's resonance was detected above the line of dullness both anteriorly and posteriorly.

Grocco's triangle was mapped out on the left side, which, to my mind, is a positive proof of effusion in the right pleural cavity.

Auscultation proved the heart and left lung normal. On the right side there was distant breathing of a tubular quality over the dullness with the vocal resonance greatly diminished.

Above the lines of dullness the breath sounds were harsh and exaggerated with a tubular quality.

To confirm the above signs and symptoms of hydrothorax two ounces of a thin straw-colored fluid were aspirated from the chest, which showed a specific gravity of 1030 and on microscopical examination a few red and white blood cells were found. Blood examination: red blood cells, 4,800,000; white blood cells, 9,000. The signs and symptoms of the angioneurotic edema, and the hydrothorax cleared up in thirty-six hours, leaving the patient apparently well.

On January 18, 1917, the patient had a reoccurrence of the angioneurotic edema, which lasted about four days; and on March 8, 1917, she had a reoccurrence of the angioneurotic edema and the hydrothorax, with about the same signs and symptoms as on August 24, 1916, with a seventy-two hour duration.

I examined the girl's chest four days after each attack without finding any signs or symptoms of hydrothorax or any disease of the pleura or lungs.

THE VALUE OF THE X-RAY IN DIAGNOSING GASTRO-INTESTINAL DISORDERS

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The day is far past when the Röntgen laboratory was classed as a high-grade photograph gallery, presided over by a photographer who was also a doctor of medicine. Today we regard it as a place where a physician, skilled in the use of the X-Ray, attempts to secure additional evidence that will aid the clinician and surgeon in forming a diagnosis. The object of the röntgenologist is to assist the clinician at a point where he most needs help and not to take upon himself altogether the complete diagnosis.

The medical profession has long recognized the value of the radiogram in locating foreign bodies; in fractures and other bone lesions; and in diagnosing kidney and vesical calculi. And both physicians and dentists are beginning more and more to rely upon radiograms of the teeth for showing hidden foci and as a guide to dental work. But it is only in recent years that the value of the examination of the alimentary system has gained a portion of the recognition that it deserves.

Just as it is frequently impossible by purely chemical or bacteriological laboratory methods to diagnose a malady, so by radioscopic examination alone a diagnosis may not be possible. The clinician and surgeon can always get better reports and better satisfaction if the request for Röntgen examination be accompanied by a note of some of the suggestive symptoms and laboratory findings. These may give a clue as to the examination required or may aid in interpretation of different observations.

In such a brief time it is, of course, impossible to discuss the subject fully and we shall attempt to barely indicate the method of procedure and give a few illustrative slides. It is neither possible nor necessary in this paper to discuss the technical side of the examination. Suffice to say that in order to see the alimentary canal it is necessary to have in it some opaque substance, as bismuth or barium, which will cast a shadow. This we generally give in buttermilk.

One value of the radiographic examination is, that we study the tract under as nearly normal conditions as possible. Therefore, we do not recommend preparation of the patient by giving cathartics or in any other way save by having a little lighter breakfast than usual on the day of the examination and for the same reason we prefer in the first series to allow the bismuth to take the natural course, which requires about twenty-four hours, and then later, if necessary, to give a bismuth enema.

The patient that is sent in to be examined between dinner and an afternoon train does not only himself but also the examiner an injustice.

As a routine, before giving the bismuth meal, we make an examination of the gallbladder region and if there seems to be the slightest indication, of the kidney region also. Where there is any indication of trouble in the liver region, the area is covered by a number of radiograms because even at the best gall stones are not easily shown. It is not always possible to show the shadows of the stones unless they are pretty heavily impregnated with calcium. The lighter stones show very slightly or a gallbladder that is diseased may give a diffused shadow that is not unlike a bladder packed full of stones.

Many röntgenologists think that any bladder that gives a shadow is pathological. The diagnosis of gallbladder trouble is often materially aided by the examination of the surrounding portion of the alimentary canal and often when a shadow is evident it is necessary to eliminate kidney calculus by injection of thorium into the pelvis of the kidney. Some of the leading röntgenologists claim that they can demonstrate as high as 80 per cent, others 50 per cent of the pathological gallbladders, but the actual stone shadows cannot be shown even in this small percentage.

Unless there is some special indication, the esophagus is not examined although it is not difficult under the fluoroscope to examine the esophagus by watching the bismuth-filled bolus pass through it. It is not always a simple matter to differentiate a spastic from an organic or malignant stricture except by repeated examination and clinical study.

Having given the bismuth meal the patient is examined under the fluoroscope both standing and prone. The position, size, motility and contour of the stomach can here be observed and radiograms made to confirm. The normal stomach presents a wide variety and only by experience will one be enabled to determine pathological conditions. In the radiograms that are made irregularities may appear that under direct examination will prove to be a prolonged spasm or a very deep peristaltic contraction, or as I have observed in a few cases in tall, thin women, a very ragged area on the greater curvature may be caused by the pressure of the ends of the ribs. Occasionally what appears even under the fluoroscope to be organic trouble, will, after a few days treatment on further examination prove to be only functional. On the other hand the form of the stomach may be distorted by pathological conditions either extrinsic or intrinsic. Gastric ulcers, carcinomata, syphilis, or extrinsic tumors will cause deformities that are persistent and each presents certain characteristics that it is necessary to observe and deter-

mine and which combined with the clinical findings enable us to make a diagnosis and frequently a prognosis.

It is all important while the bismuth is leaving the stomach that we examine carefully the duodenal cap, i. e., the portion of the duodenum just outside of the pyloric opening, as well as the duodenum lower down. By taking a number of pictures in rapid succession and by examining under the fluoroscope, evidence of ulcer, adhesions, or other trouble may be located that would confirm or refute the clinical findings. Many observers in recent years have described the dilatation of the duodenum as an entity giving definite symptoms and it is only by the X-Ray that this can be determined. Aside from obstruction, adhesions, and stasis, the small intestine below the duodenum presents very few lesions.

The study of the cecum, appendix and colon is accomplished in two ways. First by waiting six to twenty-four hours for the meal to reach this portion and second, by giving an enema containing barium. Very often by the first method alone the position and contour; the nature and effect of adhesions, bands and kinks; and the amount and location of any stasis may be determined. Frequently it is necessary to check these conditions by enema radiograms and at the same time the competence of the ileo-cecal valve may be determined. There is a very wide diversity of opinion as to its occurrence and the symptoms accompanying a valve that is incompetent. But it seems to me very reasonable that an incompetent valve should cause certain types of indigestion and autointoxication.

In regard to the appendix, the diagnosis of an acute condition does not come in the realm of röntgenology but I am fully convinced that any appendix that admits the testmeal, especially if it does not empty readily is pathological. It may give many vague digestive symptoms and on account of its irritant action may give rise to duodenal or pyloric spasm and ulcer and it may itself at any time become acute.

Now, in conclusion, let me emphasize these facts:

First. That the röntgenologist does not propose to take upon himself the complete responsibility of diagnosing every condition in the alimentary tract but simply offers his aid to the clinician and surgeon in determining the presence or absence of certain very important conditions.

Second. That in giving this aid he gives to the profession the best method that has been found of observing these hidden parts with a minimum of external interference.

PUBLIC HEALTH AND EDUCATION

THE PREVENTIVE TREATMENT OF PELLAGRA

Joseph Goldberger, Surgeon, U. S. Public Health Service

I want first of all to express my appreciation of the privilege of addressing you on a subject which, in my judgment, is one of the foremost interest and importance to the health of your State and of our country, especially at a time when all the energies of our people are of vital importance in contributing to the winning of the war.

To the practitioner of medicine the treatment and cure of the individual case of sickness is naturally of foremost interest. The studies of the U. S. Public Health Service have shown that we can practically, absolutely prevent the occurrence of pellagra but we cannot in all cases cure an attack once it has developed. Prevention is therefore of first importance and accordingly we will take up its consideration first.

Experimental studies and epidemiological observations have failed to produce any evidence that can properly be regarded as supporting the view that pellagra is a communicable disease. No germ that can properly be considered as having a causative relation has ever been found. Attempts to inoculate human subjects with the disease by means of blood, saliva, feces, urine and desquamating skin from severe cases of pellagra have failed completely. On the other hand when we fed eleven convicts on a diet consisting mainly of biscuit, corn bread, grits, rice, gravy, and syrup with only a few vegetables and no milk, lean meat or fruit, at least six developed the disease. In one of our State asylums where many of the inmates developed pellagra year after year it was observed that the doctors, nurses, and helpers who lived with them did not develop the disease. The only discoverable reason for the exemption of the nurses and helpers was a better diet. The nurses and helpers had a liberal allowance of lean meat and some milk, while the inmates had very little or none. When this observation was tested by giving the inmates a better diet—that is, by giving them more meat, milk, and fruit, it was found that the inmates stopped having pellagra. Attempts to prevent pellagra by other means have succeeded only when, whether intentionally or not, some change in diet took place at the same time. These facts with others which time will not permit of consideration show that pellagra is caused by eating a faulty or unbalanced diet, and that people who consume a mixed, well-balanced and varied diet do not have the disease.

A properly selected or well-balanced diet is one that includes in sufficient quantities and in proper form all the elements needed by the body

to carry on its normal physiological activities, growth, and repair. In order that such diet may be assured the ration should include, besides the cereals, starches, sweets and fats a sufficient quantity of milk or some lean meat and an abundance of green vegetables and fruit and preferably some of all of these classes of foods.

Milk is the most important single food in balancing a diet and preventing or curing pellagra, and when lean meat, green vegetables, and fruits are for any reason not included in the diet or only infrequently or in very small quantities, it is most important that at least three glassfuls (1½ pints), and preferably more, of milk (sweet or buttermilk), be taken daily. This single addition to the customary daily diet will in practically all instances protect the individual from an attack of pellagra. Milk for the family in these quantities is, however, frequently hard to procure. For this and other reasons it is wiser under such circumstances to use certain other classes of foods as substitutes or, preferably, as additions to the available milk supply.

Lean meat (fowl, fish, pork, beef, etc.), helps in an important degree to give proper balance to a diet, especially the diet of those who take but little milk. Under these circumstances an allowance of half a pound at least three or four times a week should be made. Part of the meat may be replaced by eggs or cheese. It will be wiser, however, not to make any reduction in the meat allowance recommended, but rather to add eggs and cheese to the diet.

In seasons when lean meats are difficult to procure or are excessively expensive, the use of the dried soy bean as a substitute for a part of the meat is to be highly recommended. It is but little known and relatively little used as human food in this country, though an extensively used staple in the Orient. From a nutritive standpoint, it is probably the most valuable of the dried beans and peas. Recent studies have shown it to be decidedly superior to the dried navy bean, lima bean, and the pea. The soy bean may be eaten boiled or baked and, in the form of soy-bean meal, may be included to great advantage in the biscuit or the corn bread to the extent of one-fifth to one-fourth of the flour or the corn meal.

Generous helpings of green vegetables (cabbage, collards, turnip greens, spinach, string beans, or snap beans), or fruits (apples, peaches, prunes, apricots), and preferably of both, should be included in the daily diet, especially when milk is not used or used only in small amounts. This is particularly important during the late winter and spring, the season when the diet is likely to be most restricted and monotonous.

While the foregoing recommendations have in view primarily pellagra prevention, the same diet serves satisfactorily also in the treatment

and cure of the average case. For severe cases a more liberal allowance of milk should be made. In some instances, in fact, only liquids can be taken. In these, milk, fresh-meat juice, meat broth, bean, pea, or potato puree, and "pot liquor" should form the diet until more substantial food (milk toast, soft-boiled or coddled eggs), can be added. The food should be given in adequate amounts at regular intervals just as is done with medicine. Indeed, for the cure of pellagra the only medicine we have is the diet. The only use that medicines (drugs) serve in pellagra is the alleviation of painful symptoms and in the treatment of complicating conditions.

It is not my purpose to discuss this phase of the subject except to warn against the still too frequent practice of promiscuous drugging. Nothing should be permitted that will dull or tend to dull the appetite for success in treatment depends on an adequate intake of the proper foods.

DISCUSSION

Dr. E. J. Wood, Wilmington: There is no discussion in order of anything that Dr. Goldberger says on this subject because when he has spoken everything that is known on the disease has been said.

I want to say on behalf of the whole State of North Carolina that the coming of Dr. Goldberger is not second even to the coming of Dr. Stiles to North Carolina in 1903 at Hot Springs when he brought us the news of the hookworm. There is nothing that has ever happened in North Carolina that could be so far-reaching and could do more for the everlasting upbuilding of this State than what we have already heard today. There is nothing to be added. He has said the Alpha and Omega.

About two and a half years ago Dr. Goldberber lifted the scales from my eyes when I had floundered for twelve or thirteen years in the study of this malady, and since then I have been seeing through his eyes the only light of day that there is on the subject and I feel that no honor that we could pay him for what he has done in the greatest piece of public health work that any American has ever undertaken and carried through successfully could be too great.

I want to take the liberty of using a few minutes to go into a few details. I have not the audacity to disagree with anything that Dr. Goldberger has said, but there are a few things I want him to answer in closing the discussion.

In the first place, I have noted the great difficulty which we all have in getting the country people to drink milk. I do not know whether that is true all over the State, but that is what we have to contend with in the eastern part of the State. We will have to find a substitute for milk. Another point, concerning the unconscious or demented patients, treated

in the James Walker Memorial Hospital, which has probably more cases than any large hospital in the South. We feed those people through a tube, a pint of milk, three eggs and one ounce of sugar every eight hours. We got only indifferent results until we added a gruel of wheat middlings to it. The addition caused a great improvement.

Another thing Dr. Goldberger mentioned, which is of the utmost importance in the treatment of our cases is the very nice young lady of the high walks of life who comes to us; she is wearing fine clothes, and we wonder why she has it, but if you ask her a few questions and if she tells the truth, you will find she is a biscuit eater, or has some other freak of diet.

Prof. Voegtlin says that when soda is added to the vegetables to make them cook quickly, the effect of the soda carbonate after decomposition of the bicarbonate, renders that food deficient apart from anything else. I have been interested in the last group of cases to ask the questions, How do you cook your food? Do you use soda biscuits? Do you add soda to your vegetables? And I have found a striking parallel to these cooking errors. That has led me into a study of baking powders. I am now working on determining whether the acid ingredients of baking powders are carefully enough balanced in the preparation and if the unventralized alkali is strong enough to be harmful. I have been impressed with the fact that some of the most expensive give alkaline results, whereas, some of the cheaper ones do not.

Another thing of most far-reaching importance in North Carolina in the treatment of this disease, which is also the prevention, is the far extreme to which the profession has gone in recommending the abstinence in proteids in the treatment of high blood pressure cases. Sometimes I see the disease in a man with high blood pressure who has left out the thing they most need. They can all drink milk. You cannot get the people of eastern North Carolina to drink milk.

Another thing and I am through. We cannot too strongly emphasize the danger of the indiscriminate use of arsenic in large doses which is a common error in North Carolina. I am largely responsible for a great deal of it. I gave in the past all the arsenicals in many cases, and I am disposed to think that a great many of the distressing features of this disease, the painful feet and hands, are due to the injurious effect of these arsenicals. It does not seem justified in being given by the man who is not going to watch his case.

Maj. J. J. Kinyoun, M.R.C., U.S.A., Raleigh: I feel deeply repaid for coming to this session of the North Carolina State Medical Society. It has not only been an inspiration, but a treat. A great store of information has been given to us by Doctor Goldberger, whom we all honor and

revere for his work in this particular disease. Years ago, when I was in Italy, I saw something over 150 cases of pellagra at Bologna. These I studied with a great deal of curiosity and interest, but I dismissed the subject so far as this country was concerned, because I was then under the impression that it was a disease incident and peculiar to Northern Italy. So when I returned home, I dismissed the subject and turned my attention to other things which I thought more important. Several years after, I saw a case in Richmond, Virginia, which was perturbing. It was like remembering a man's face but forgetting his name, and it kept reverting to me, where have I seen such a case as this before? But the line of continuity between the Italian subjects and the negroes was broken. On seeing the second case, it then occurred to me that this is the corn bread disease of Northern Italy. I then recognized that we had to deal with cases in this country of the same character and nature as I had seen in Bologna.

Doctor Goldberger, I think, has said the first and last word regarding the etiology and the prevention of pellagra. When he first announced his conclusions, I did not accept them all at once, because I had been residing in Missouri for a number of years and I "had to be shown." I at first was inclined to attribute his unbalanced ration as one to fit his unbalanced theory, but since I have been shown by Doctor Goldberger, I am more than convinced that his conclusions, based upon his observations and experience in Georgia and Mississippi, are just as strong, convincing, and conclusive as those of Walter Reed in his investigation of yellow fever. Doctor Goldberger, therefore, has said the first and the last word.

I would call attention to the propaganda which is now being circulated by our government regarding "save food," "save wheat," "save sugar," "give it to the soldier," do not eat this and do not eat that. While I believe that such propaganda will result in economy, I do not believe that this should be taken to mean that we should starve ourselves and bring about exactly the condition which Doctor Goldberger calls the unbalanced ration. We cannot expect men and women to come up to physical standard nor children to grow and flourish on a poor diet. I should try to impress upon the people that we should economize and use such foods as will keep the people in the best condition. For if we were to emphasize better prepared foods, better cooking, take some of the lessons of economy which the French people have long ago learned and apply these to the use of foods, we will not only economize, but keep our people in far better physical condition than now obtains.

At the present time, there is too much food wasted in our homes and

particularly so in our hotels and restaurants. If we are to go on a basis of a war diet in our homes, I see no reason why we should not apply the same principle to an institution like this hotel in fact. I believe the food that is wasted here at this institution would be sufficient to prevent pellagra in half of the cases in which the disease appears.

Dr. P. R. Hardee, Stem: I feel that I have gotten great good from being here this morning. I am glad that the problem of pellagra has been worked out to a point in which we know something definite about it. I am also glad, I was very glad, to hear Dr. Wood speak what he did about the use of arsenic in the treatment of this disease. I would like to go on further on that particular point, but there is something more important that I want to get over in this minute's time.

It has been shown clearly that pellagra is a nutritional disease, that it is a fault of metabolism, a poverty in the system. At the risk of being ridiculed by the younger element of the profession I want to call your attention to another disease that is also a nutritional disease, a disease that is caused by a deficiency of something in the system, and this disease that I want to call your attention to is being mistaken by the younger element of the physicians every day for pellagra. If I were to ask the older element of the profession if there is such a disease as nursing sore mouth, they would say "Yes."

We have treated it years before pellagra was ever discovered in this country. We have a clear history of nursing sore mouth since about 1820, but it was not until the decade of 1880-1890 that the pathology of nursing sore mouth was known. During the decade 1880-1890 Dr. N. S. Davis worked it out and showed that nursing sore mouth is caused by poverty of the blood which is caused by a deficiency of phosphates. Since Dr. Davis's thesis on the subject I have been unable to find stomatitis materni indexed in any medical literature. Hence, I am not surprised at the younger members of the profession being skeptical. But let me admonish you that when you meet a lady in the later months of utero-gestation who is suffering with sore mouth or, perchance, sore mouth and diarrhea, do not be sure that you have a case of pellagra but put her on compound syrup hypophosphites one-half ounce every four hours, and my word for it she will be greatly improved in three or four days. Continue this treatment during lactation, and the skin and other symptoms of pellagra will never develop; and when her period of lactation is over you will find her as well as ever in her life, never again to be troubled with sore mouth unless she again becomes pregnant.

Dr. G. T. Sikes, Creedmoor: I do not expect to add anything on the subject of pellagra. I want to thank Dr. Goldberger for the exceeding

clear and concise manner in which he has explained this trouble and the prevention of it to us this morning.

Very well, you remember for quite a number of years now it has been a very important subject for our consideration at these meetings, and I recall quite a number of things that have been said, some of which have been said by you, Mr. President, and at the same time I recall the fact that up to the present time we have not had anything before the Society that I considered really the scientific covering of the disease, and I am thankful to be here this morning, and hear these discussions.

There are several things I would like to reply to but it is not necessary for any of us to criticize, but rather act upon Dr. Goldberger's mature judgment and scientific investigations.

I would say to Dr. Wood that if he lived in the hill country as some of us do where we live largely on vegetables and milk, and where we have nice milk cows, a very healthy and rich quality of milk, I do not think he would have much trouble in getting his people to drink milk.

In reference to the cooking, we are very proud in North Carolina of our schools, and the domestic science there taught, which is doing a great deal for cooking and housekeeping; and you young men who have not been fortunate enough to secure for yourselves a mate for life, would make no mistake to see some of these who are coming back capable of loading your table with things that will be good for your appetite and your digestion in years to come.

So many things could be said on this occasion that we can only take in and consider a little of it here, but for those of us who live out in the rural districts, to whom the opportunity is presented of attending these meetings, it is really a feast to come and have these scientific gentlemen bring to us their results, their investigations; and if we will just take them back and apply them in our practice, I fully believe, yea know, that we can carry back something to our patients that will be really valuable to the people from whence we came.

Dr. J. R. McCracken, Waynesville: I would just like to ask Dr. Goldberger if pellagra has been prevalent in the Southern States prior to the last fifteen years. I have been practicing just about fifteen years and I remember when it was first brought to the attention of the North Carolina Medical Society. I had not seen any cases at that time. The first case I had I took an old doctor seventy-five years old to see it. He said he had practiced medicine fifty years in different parts of the Southern States, and had never seen anything like it.

Dr. H. D. Stewart, Monroe: Some time ago I read that if you feed a lion on grain, he will go crazy; if you feed a cow on meat, she will become insane.

I believe if Dr. Goldberger and the other investigators will go through and investigate bacteriology of the intestinal tract, they will find nearly all diseases come directly or indirectly from bacterial infection of the alimentary tract. If a man is properly nourished, pellagra is not going to take hold of him. Take a negro with syphilis for thirty years, give him plenty to eat and sanitary environs and the disease will not develop. I believe pellagra is a bacterial disease, due to some specific bacterium infecting the alimentary tract. Dr. Goldberger may be the one to discover it. I believe it will be isolated some time and a serum produced to neutralize its acid toxins.

There are a few questions I should like to ask Dr. Goldberger. Why is it three times as common in women as it is in men? Why is it they don't have it in colder climates? And another question, why is it more common at certain ages than at others? What I am striking at is that there are certain ages that are liable to certain diseases; children are liable to certain diseases; children are liable to diseases that the mucous membrane of an adult will resist.

Talking about the rich and the poor having it, if you give a rich man plenty of corn or rye whiskey for a while and let him stay drunk long enough, he will have it. I saw a man worth $100,000 have it. I saw a farmer have it from drinking blockade whiskey. He was as crazy as a bed bug. That fellow went to the asylum at Morganton and came back improved. He has worked several crops since his return. I saw two cases of pellagra in one family—one twenty years of age, one fifty. This fifty-year-old man told me he had had it sixteen years. I understand it was discovered about ten years ago by several fellows who had the self-imposed honor of having discovered the first case in this country. Several of the first cases proved afterwards to be syphilis.

PROTECTING PHYSICIANS IN THE ADMINISTRATION OF PUBLIC HEALTH LAWS

A. M. Crouch, M.D., State Epidemiologist, Raleigh

We have never had in this State until recently an adequate system of reports and quarantine for the control of communicable diseases. This has been due to an absence of sufficient interest on the part of the people and the medical profession in communicable disease control. Much of this indifference has been overcome and sufficient interest has been aroused to secure the enactment of State legislation. We now have ample quarantine laws, rules and regulations which when properly applied

materially reduce the number of cases of communicable diseases. The success of this law depends largely upon the support of the medical profession and until the indifference of a few of its members is further greatly reduced, maximum results, in communicable disease control cannot be obtained. Besides delaying the passage of proposed health laws and attempting to defeat the purpose of enacted quarantine regulations indifference has placed unfair burdens upon the shoulders of ethical physicians. While this indifference among physicians towards reporting of communicable diseases exists a strenuous effort must be made to protect the physicians who report their diseases against physicians who do not report.

Indifference is not the only reason why physicians fail to report. They sometimes fail purposely because they wish to gain favor with an ignorant family and destroy the tie that binds a patient to a more ethical doctor. Evidence of purposely failing to report is manifested in the following incident:

In a prosperous little town of this State scarlet fever occurred and several cases developed. All the physicians, except one treating cases, promptly reported them and the patients were quarantined and the exposed susceptible persons were isolated. The physician who failed to report treated his cases under the name of stomach rash until circumstances grew suspicious and an official investigation exposed him, then he admitted to the magistrate it was scarlet fever. If the investigation had not been made to determine the nature of the disease, this physician would have continued his underground work taking advantage of his more ethical fellow-workers in order to gain favor with people who object to quarantine. Until the public mind has learned the value of reports and quarantine in controlling diseases and until public sentiment is sufficiently intelligent to recognize and resent the above form of unfair practice among a few unscrupulous physicians, statutory powers will be necessary to protect both the law-abiding physicians and the public.

If all physicians would report every case of communicable diseases which come into their practices, people would soon learn that they have no choice of physicians to avoid quarantine. When such a time comes our best physicians will not be embarrassed for reporting their cases with threats of being replaced by another physician. Perhaps to relate an actual occurrence will give you a clearer idea of what I mean:

A prominent physician was called in to see a sick child and he diagnosed the disease a contagion. The family knew this doctor would report the case and that they would be quarantined; so the mother very boldly said to the attending physician, "Doctor, some of my neighbors have not been quarantined, and if you think the child has scarlet fever I will

call another doctor to take charge of the case." That was an open threat, a test of the medical ethics of an honest physician by an intelligent mother. The physician, fearless as a lion, replied, "Madam, if that is the price of your practice, call another physician." The mother saw the impression of her threat upon her physician and she realized that it was too late then to call another. The physician in charge did not lose this case, but it goes to show that some people are looking for the physician who does not report. If this mother had suspected scarlet fever and had anticipated quarantine, an unscrupulous physician would have been called to take the case.

The above examples of unfair practices in dealing with communicable diseases are only a few of those that actually occur. But the cases mentioned are enough to show that stringent measures for the protection of the great mass of physicians are necessary.

The law rigidly enforced puts physicians on the same basis in dealing with communicable diseases and prohibits an unscrupulous physician taking advantage of an ethical one even when an opportunity is offered.

There can be no distinction made among those who fail to report their cases. Be it purposeful or neglectful, it amounts to the same in the sight of the law and is unfair to the great mass of physicians who do report. It must be understood that the law will be enforced against physicians who fail to report not only to protect the community where communicable diseases exist but also to protect the physicians who do report.

The physician who reports his cases should be protected not only for his reporting but because he is giving impetus to a great movement, a movement for the protection and preservation of the health of both the present and future generations.

Eighty-five per cent of the medical profession have endorsed and are supporting this great movement for communicable disease control. Among these 85 per cent of physicians are captains of good-fellowship who make medical societies, practice medical ethics, and live by the golden rule. Any man entrusted with the enforcement of a law which affords protection for such men can be stamped with no greater stigma than to stand motionless and see a few indifferent or unscrupulous physicians strike a stealthy blow at medical ethics.

WHAT PUBLIC HEALTH OWES THE INFANT

L. W. Elias, M.D., Asheville

Public health service to the infant is largely one of prophylaxis. Holt says: "There is no more promising field in medicine than the prevention of disease in childhood." With the imperative demand for greater manpower, coupled with the frightful loss caused by the war, the conservation of child-life assumes an importance such as was never felt before. The means by which public health must work is education, through the press, through legislation, and more directly and effectively, through the visiting nurse. This education must reach and influence the mother. When the mother has the knowledge, and in such a forceful way as to affect her care of her baby, then public health will have discharged its obligation to the infant; and not till then can it rest from its labors.

This paper lays claim to no profound advice on the subject; but merely attempts to consider one vital aspect, namely, the kind of knowledge that should reach the mother. The suggestions are from the viewpoint of one treating children. What will be said is merely a brief outline of the information that must be gotten to the mother, regarding her baby, and incidentally, concerning herself. As the paper is cast in the form of an appeal to the mother, please pardon a rather didactic style.

Much can be done for the baby before it arrives in the world. The proper care of the mother goes far towards insuring the health and life of the baby-to-be. In Boston an organization of philanthropic women who looked after pregnant women workers, were able to reduce miscarriages and stillbirths 15 per cent and very materially increase the number of those who lived after birth. The means which they employed were visits by a trained nurse who took blood pressure, examined urine, inquired about the general symptoms, and advised proper diet and hygienic living. All abnormalities were at once reported to physicians, who took the proper steps to right them. Arrangements were made by which the woman's work was lightened for her, and the last six weeks they did not work in the factories, but rested. The future of North Carolina could be greatly improved by such care.

During this period one should attempt to win the mother's confidence, and then plant the seeds of reform in her mind. Appeal to her pride, her affection and better judgment while informing her as to the proper care of a baby. Thus not only will she be instructed, but she will be forearmed against the many false ideas of well-meaning and insistent relatives, friends and neighbors.

A further aid both to mother and baby is a hospital for the confine-

ment; and it should be explained that it is far more essential that a confinement be conducted in a hospital, than that one should go to a hospital for an appendiceal operation. Following the birth of her baby, the mother should take at least four to six weeks rest before returning to her ordinary work again.

Let us consider the immediate care of the baby. One-fifth of the race dies in the first year of life, one-tenth in the first month. So it is readily seen that using prophylactic measures at this point is attacking the subject where the greatest need exists. Therefore we should concentrate on this critical period.

Not only must the newborn baby breathe, but it should breathe immediately and deeply. Prolonged asphyxia is detrimental to the brain cells, and may cause permanent damage; while atelectasis is a frequent cause of death in the newborn, and must be prevented by securing deep breathing at first, and maintaining good respiration, aided frequently by vigorous crying. The mother must be taught that crying is as essential to the baby's health (its only exercise) as is romping and shouting for a two-year-old. To prevent the exercise in either case is harmful. So teach the mother not to fear crying, *per se,* as it is absolutely harmless, the only possible harm is from what the baby is crying about. If this is disease, or colic, or a pin, or any other trouble needing attention, relieve it; but not the crying for itself, otherwise she works against her infant's welfare.

The eyes of the newborn baby must be washed off with boric acid, and silver nitrate instilled into the eyes. The use of silver nitrate should be preached till no doctor or midwife will ever dare neglect it. Not only this, but since the $AgNO_3$ is quickly neutralized, the eyes must not be reinfected. It must be taught that the mother and the baby are mutually infectious to each other through discharges, and these must not be carried from one to the other.

As soon after birth as convenient the baby is greased with sterile olive oil, and wiped off with a soft towel. Thereafter it is daily soaped and rinsed off in clear water, gently dried, and powdered in all the creases of the skin. The eyes are washed off daily with boric acid, and the mouth swabbed out with same, once a day, very gently. The chief object of this latter, however, should be to see the condition of the mouth rather than to try to cleanse it. Omit the washing of the mouth at the nursing period, as this is not only useless, but may easily be harmful.

The baby is quickly heated and as quickly chilled; the temperature must be kept uniform. Chilling not only causes it to lose weight, but harmfully affects the vital centers. On the other hand, piling all the dainty blankets and covers in the house on the little fellow is almost as

bad. The baby's heat should be kept up by moderate covering and by the use of hot water bottles, which latter must also be watched; for if carelessly used, they may cause a perfectly normal baby's temperature to rise to 106, or above. If the baby is premature, or under five pounds in weight, the heat is of greater importance than the food. In this case, too, it is best to oil the baby and wrap in cotton, and place in some sort of receptacle which will secure uniform warmth, and at the same time plenty of fresh air without draughts, a padded basket with hot water bottles, for example. This must be continued until the weight and vitality become satisfactory. The mother and baby must have quiet, the mother for the sake of good milk, and, as stated above, she should not resume her ordinary work under four to six weeks. This time being as free from home duties and annoyances as possible. The baby's quiet is for the sake of good digestion, and in the interest of its nervous system, the brain growing more in the first two years than in all the rest of life combined. To secure proper development it must have quiet and freedom from such unnatural stimulation as being played with, and shouted over, and being shown off to the company.

All visitors should be tabooed at first; and those especially to be avoided are people with colds, or who have been in close contact with those suffering from rhinitis, coughs, fever or indispositions of any sort. The feeble resistance of the baby should emphasize this precaution.

When one considers a newborn baby and the work that is before it, the chances against its living seem appalling. In the first place, the baby is immature in every detail. From the surrounding skin to the bony framework within, and from the brain centers and nerve sheaths to the weak digestive juices, everywhere we find such a lack of development as to leave us wondering.

Probably we notice this most in the nervous system, where the nerve sheaths are so poorly developed that nerve impulses are easily lost, so that a baby rarely has a reflex convulsion under three months of age; and nerve control over heart and lungs gives irregular respiration, and pulse and very small stimuli cause startling and profound reaction.

Scarcely less poorly equipped for its task is the digestive system, so weak and poorly balanced that the slightest changes throw it out. We see a hot day, badly swollen gums, a slight cold, a small nervous shock as from too much handling, etc., set the baby vomiting or start up a diarrhea, so unsteady is the equilibrium of the digestive system.

This much in brief for the poor equipment of the baby to maintain its existence. But the wonder grows when we remember the second phase of an infant's activity, viz., growth, and contemplate the stupendous task of almost tripling its weight in the first year. Or speaking

in adult terms, it starts the year with 142 pounds and ends weighing 400 pounds. It accomplishes this, too, with a digestive system that is set on a hair trigger. One can readily understand how carefully the food must be selected, how judiciously given, how perfect must be the elimination, that no clogging of the system occurs, while it is working constantly, at top speed, with forced draft, else the feeble digestive system may break down with a crash.

It is facts such as these that public health must impress on the mother if the debt to the infant is ever to be discharged.

As to feeding the baby: Let the mother know that the strength of her milk varies with the length of time between nursings, being richer in cream the oftener the nursings. Let the mother understand that prolonged crying is from discomfort, almost never from hunger. A safe rule is this, in the presence of severe crying, weaken or omit the food until the cause is ascertained. One can never go far wrong on such a course, while to follow the usual method and feed the baby every time it cries, on the supposition that it is hungry, leads to an enormous amount of harm. Of course the correct plan is to let the baby nurse every three hours for the first six months, omitting the midnight feeding after the third month. From six to twelve months the intervals are every four hours. The same hours should be observed constantly, to avoid confusion; the baby should be waked at the proper hour if necessary, or, if fussing ahead of time, should be left alone till the hour is up. By exactness in this matter, the baby will soon wake on the hour from force of habit; also it will play and amuse itself if awake before time. Thus regularity insures uniform strength to the mother's milk, and it trains the baby to be contented and good natured about unpleasant situations. This will go far towards preparing the baby in the best way to enjoy health; or, if necessary, to make a more successful fight in sickness.

As to the food in the first year. Mother's milk has won out over all other competing foods. And from one end of the country to the other there is an ever swelling chorus, "give the babies mother's milk." If its own mother is not able to nurse it, then some other mother—white, black, red or brown—but a healthy human mother. The color of the mother is of no more importance than is the color of a cow. Give the baby mother's milk and forget all other foods. The baby's own mother should nurse it if possible, and none but the gravest consideration should make her wean her baby.

Regarding the foods of the second year, two very important points should be stressed, namely, the thorough cooking of all starches, and cooking all vegetables until soft and tender and then straining through

a sieve; remembering that the thorough preparation of the vegetable is of more importance than the kind of vegetable used. The dessert should be of the simplest and most wholesome.

Some mothers when given a plain, nutritious diet, state that their children eat everything without harm. These should be reminded that children may play near a precipice without falling over and breaking their necks. Nevertheless it is a poor place to let children play; so with foods. It is not all that can be eaten, but it is the safe food that a wise mother should want her child to have.

This brings up the great disease of the second year, summer diarrhea. Its causes are varied and not perfectly understood. But we know enough to be able to greatly reduce the incidence. First by careful attention to all mild digestive disturbances, since the disease seldom comes like a bolt from a clear sky, but is usually implanted upon soil that has been prepared by minor attacks of digestive trouble, thought to be of no moment. Then, teach the mother to get the purest milk available, keep it constantly cool, and see that everything which comes in contact with it is sterile; and as a final measure, throughout the warm weather boil the milk.

Regarding the baby itself. On hot days take its clothes off, sponge frequently, reduce quantity and quality of food and make free use of an electric fan and any other measure that will keep the baby cool. These two measures will go farthest towards limiting both the mortality and the morbidity of summer diarrhea.

As to diseases in general. Teach the mother to call the doctor as soon as the baby is indisposed; if for no other reason, to find out if the disease is contagious. Teach the mother that if the doctor fails to look into the baby's throat he has not examined the baby, and she should call another physician.

This last is illustrated in what should be taught the mother in regard to contagious diseases; that the contagion enters the system through the mouth and nose, and that the chief danger is from the discharges of the mouth and nose. Isolate the patient, and avoid contact, with and destroy these discharges, and we have told the mother nearly all, with the exception of typhoid fever, that she needs to learn about the transmission of contagious diseases.

Let her know that the baby should be vaccinated against smallpox and typhoid. Let her know that in spite of the greatly lessened mortality through the use of antitoxin diphtheria is still the largest factor among contagious diseases in robbing her of her children, and teach her that she may and should know which are the susceptible ones and should have them actively immunized.

CONCLUSION

Southern babies should sleep out of doors day and night, with few exceptions, the whole year round. This will reduce the tendency to colds, croup, pneumonia and tuberculosis, improve appetite and digestion, and thus increase growth and counteract anemia and malnutrition. Aside from unwholesome food and bad feeding habits, probably the most widespread evil among mothers in all grades of society is the neglect of a proper amount of fresh air. This sleeping out of doors the year round, day and night, should be preached in season and out of season, till it becomes such a prevailing fashion, and its virtues so widely understood that no baby would suffer for lack of it. It is what Dr. Northup calls the 23-hour treatment, meaning 23 hours out of the 24 in fresh, flowing air. What he advocated in New York, surely no southern doctor can afford to neglect in our milder climate. Keep the baby as warm as necessary for comfort, by all means, but keep it out in the fresh air, rather than in a room with the windows open, and the difference will be startling.

When public health has effectively taught the mother these points, its debt will have been paid up to date, and it will then be ready to take up the new responsibilities which have accumulated by this time.

WHAT I HAVE BEEN INSTRUMENTAL IN ACCOMPLISHING IN EIGHT MONTHS AS A WHOLE-TIME HEALTH OFFICER

F. M. Register, M.D., Jackson

To tell what a whole-time health officer is instrumental in accomplishing and not over or under estimate is certainly a hard question. Health work I am sure is at least ninety per cent educational. You try to educate the people just as the teacher in the public schools tries to educate his or her pupils. His success in educating the pupils depends on three things: his ability to instruct; the pupils' ability to receive the instruction; and the coöperation of the parents. So in health work the same thing applies. The health officer's ability to instruct, the people's ability to receive instruction and the coöperation of the people at large. In starting up our health department in Northampton County, I made as many mistakes it seems to me as Heinz's 57 varieties. I am glad to say that I found the greater part of my mistakes and corrected quite a number of them. The greatest thing I have accomplished is getting the cooperation of the majority of the best people in the county. Another

thing is getting all the publicity of the work possible, this is done by always being on hand at the gatherings of teachers, farmers, and politicians, with something on sanitation—a model of sanitary toilet, charts, etc.—always letting the people know what you stand for. I have the grand jury during court visit my office and report conditions just as they do other public offices. I had exhibits at all community fairs in the county. I have visited all schools except eight in the county and examined those supposed to be defective—as indicated by the teachers' ex-examination. Vaccinated 750 school children against smallpox. Over 50 treated for defects. Have talked in all the schools and one thing I have tried to impress on the minds of the children was this, that I am their friend. Not an officer in the sense as usually understood, *e. g.*, sheriff; but a specialist on disease prevention; in other words a county health doctor. This simple thing I am sure goes far towards getting the coöperation of the people. I have vaccinated over 5,000 people, giving three doses to each. Have examined over 2,000 people for hookworm, and treated over 600 people for this disease. Made a sanitary survey of over 3,000 homes and was instrumental in building 726 sanitary toilets. Gave 97 lectures at schools and other places, with an attendance of 9,075 people. Distributed 5,000 pieces of literature. Wrote 52 articles for the newspapers. Did all the quarantine work for the county and all other routine work as county physician. Was instrumental in getting water and sewerage in the courthouse and jail. Arranged for an essay contest among householders and schools making the most sanitary improvements. Result: 41 schools improved their sanitary condition, 200 wrote essays on the subject, 3,000 survey blanks filled out by the school children, 100 householders improved their sanitary condition, and 900 specimens were examined for hookworm. Taking everything into consideration, we feel right much gratified at the amount of work done in Northampton County during the first eight months of health work. It would be unfair in completing this report not to give credit to those who have helped this department do what it has done. We are especially indebted to Dr. B. E. Washburn, State Director of County Health Work; Miss Katie Lee McLeod, Microscopist; Dr. Mary Wetmore, Field Worker; Mr. P. J. Long, Superintendent of Schools; Miss Ethel Kelly, Rural Supervisor of Schools; Mr. W. M. Wall, Farm Demonstrator; Mr. C. E. Nelson, Field Worker; Mrs. F. M. Register and Mrs. Sarah Randolph, Colored Supervisor of Schools.

ANATOMY

KIDNEY WITH INFERIOR RENAL ARTERY, COMPLETE OSSIFICATION OF STYLO-HYOID LIGAMENT, THORACIC AND ABDOMINAL TRANSPOSITION.

G. Alfred Aiken, M.D., Wake Forest
Professor of Anatomy, Wake Forest School of Medicine

KIDNEY WITH INFERIOR RENAL ARTERY

While vascular anomalies of the kidneys are frequently observed, our case is unique in that in addition to a normally sized artery we have an inferior renal artery given off from the aorta just above its bifurcation and entering the substance of the kidney at the inferior apex.

Our specimen was found in a male negro of robust build, 70 inches tall, about 35 years of age. Death caused by electrocution. All the abdominal viscera were normal except the right kidney. This was normally located and suspended and was 4⅝ inches by 3⅜ inches, and its greatest thickness was 1¾ inches. It weighed 6 ounces. The hilum was absent and the artery, vein and ureter after dividing penetrated the kidney on its anterior surface one-fourth the distance from the medial border. An anterior lobulation covering the superior half of the kidney was present and the vessels entered and departed from the recess between this lobulation and the normal surface. The relations of the branches of the renal artery, the tributaries of the renal vein and of the ureter are shown in the cut.

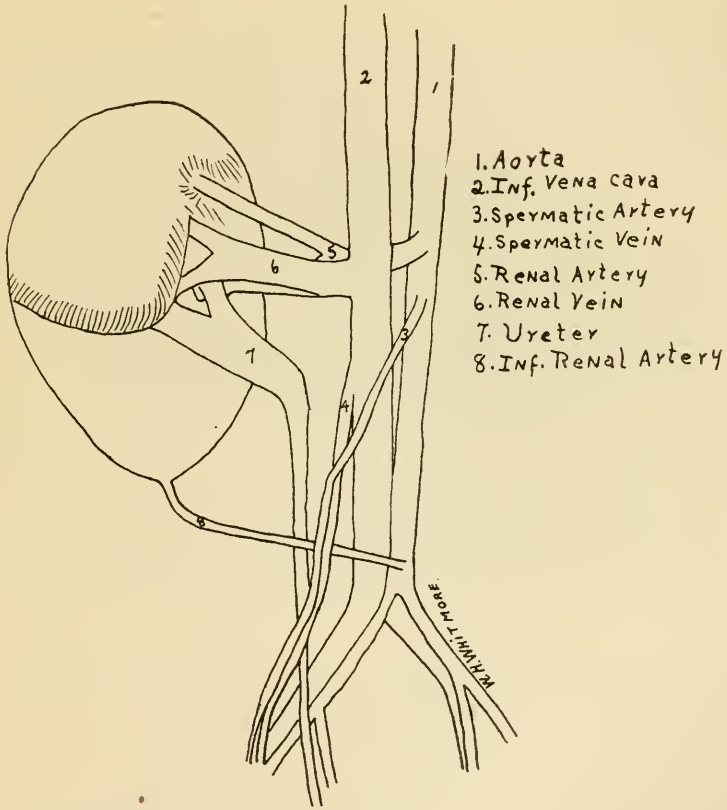
The inferior renal artery left the aorta on the anterior surface at a point ⅝ of an inch above the common iliac arteries. It is a well formed artery ⅛ of an inch in diameter, passing over the inferior vena cava, under the spermatic artery and vein and over the ureter. After entering the kidney it passed up, giving off branches into the substance of the kidney and finally anastomosing with branches of the superior artery, within the kidney.

The histological structure of the kidney is normal.

COMPLETE OSSIFICATION OF STYLO-HYOID LIGAMENT

A partially ossified stylo-hyoid ligament is frequently observed. We here present a case in which ossification is so complete as to give us a styloid process which extends to the lesser cornu of the hyoid bone. At the point of union of the styloid process and the stylo-hyoid ligament is a prominent tubercle. Ankylosis in this tubercle is complete although there is evidence of a preëxisting movable joint. The inferior extremity

of the ossified ligament had detached itself from the hyoid bone, had destroyed the hyo-glossus muscle and had completely severed the internal carotid artery. The gap in the artery separating the blind stumps is ¾ inch, the inferior stump being normal in size and structure, but the superior stump had atrophied and the lumen become occluded to within ½ inch from its entrance into the carotid canal.



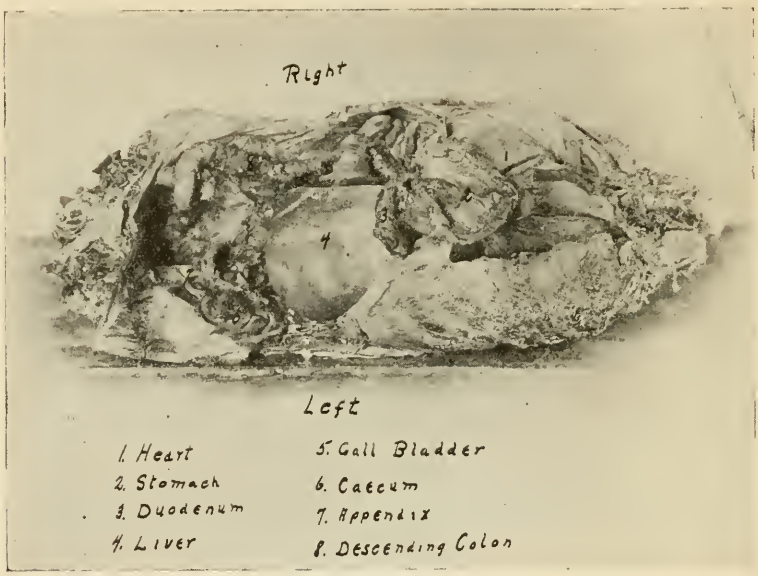
Our anomaly occurred on the left side. The length of the process is 2½ inches as against a normal styloid process which averages ⅜ inch. The right styloid process in our subject was ⅝ inch.

THORACIC AND ABDOMINAL TRANSPOSITION

We wish to present a case of complete transposition of thoracic and abdominal vicera and vessels. The subject is a well-developed male negro of about 40 years. The left pleural sac is filled with a serous effusion and the lung is collapsed. The liver situated heterotropic is somewhat enlarged, however the left pleural effiusion has evidently forced

the liver downward into the abdomen. In the dissection the right lobe of the liver has been removed to a line running upward from the gall bladder, permitting the reflection of the stomach upward over the apex and medial border of the heart.

The spleen and pancreas bear their normal relations, placed on the right, but are not visible in the photograph. The small intestines have



been cut away from the second part of the duodenum to within 5 inches of the ileo-cecal orifice. The large intestines are shown vividly except the portion of transverse colon covered by the liver.

Fecal rotation had been complete, the cecum lying in the left iliac fossa, with the appendix extending downward, medially.

In the thorax we find the lungs transposed. The heart is transposed with markings corresponding to normal. The blood and lymph vessels adhere to the transposition.

DISCUSSION

Dr. E. T. Dickinson, Wilson: Last week I observed a very large vein entering the lower portion of the kidney and it was not accompanied by an artery, and this was the size of a pencil. I happened to observe this before breaking up the kidney thoroughly, and I had no trouble with hemorrhage, and I must think that these veins are very frequent. They seem to occur with operators frequently.

Dr. Parrott: Is there any further discussion of this paper? I am going to ask the gentlemen when arising to announce their names so that the stenographer may get them. If there is no further discussion Dr. Aiken may have the closing discussion.

Dr. Aiken: I would like to ask Dr. Dickinson if his venous abnormality entered the vena cava. Venous anomalies are more frequently observed than are arterial anomalies. The departure from the normal usually is confined to a variation in the length of the tributaries of the veins and the branches of the arteries. The striking point in my kidney is that the inferior renal artery comes off the aorta low, and enters the kidney substance at the inferior apex, giving off branches into the kidney substance and finally anastomosing with branches of the superior artery within the kidney structure.

The absence of a hilum, the overlapping lobulation, and the vessels entering and departing on the anterior surface are interesting because of their embryological development.

PATHOLOGY AND BACTERIOLOGY

SOME OF THE MORE IMPORTANT BONE DISEASES AS DEMONSTRATED BY THE X-RAY

R. L. Pittman, M.D., Fayetteville

There has never been a greater aid to the medical profession, both in diagnosis and treatment of many diseases, than is found in the proper application of the X-Ray for diagnostic and therapeutic purposes. Early in the discovery of the X-Ray by Röntgen in 1893, much doubt was expressed as to the efficiency of the X-Ray, many great authorities of that day, often referring to the X-Ray machines of that time, which were of course in their earliest experimental stages, as mighty nice things to play with; and I, myself, have heard some men who call themselves good surgeons, say that before the day of the X-Ray they had no trouble in treating fractures, that they could easily differentiate the various diseases of the bones and joints. This of course is no discredit to the X-Ray, but is good evidence of not only a poor X-Ray knowledge on the part of such surgeons or practitioners of medicine, but is an absolute indication of their ignorance and guilt, as now we have a means of detecting such errors before it is too late, and can prevent both undue suffering and permanent deformity on the part of many patients.

Is the X-Ray still an instrument for specialists? No, not altogether. Of course it is not practical for every practicing physician to possess an X-Ray outfit but he should always, in case of doubt, or where he wishes a more conclusive and positive diagnosis, refer his case to a competent röntgenologist where his patient can receive expert service in this line.

The knowledge of the various diseases of bones and joints has been much augmented and new laws of differentiation between inflammatory, syphilitic, tuberculous or ostemyelitic processes, and osteoma, osteosarcoma and osseous cyst have been established. Therefore, the purpose of this paper is to impress upon every one of you the importance of acquainting yourself with the facts set forth in the following paragraphs in the diagnosis of osseous diseases and differentiating one from the other.

From the title of my paper you may surmise that I want to undertake to discuss all diseases common to bones and joints. No, that is not my intention. I shall name several only to pass them by. Namely, exostoses, arthritis, acromegaly, rachitis, etc. The three most common osseous diseases and by far the most serious are syphilis, osteomyelitis and sarcoma. I shall endeavor to establish the characteristic points of differentiation of these diseases.

Acute Osteomyelitis and Periostitis: Both septic and tuberculous

differ only in their rapidity of development, history and course of the disease clinically. The X-Ray findings are essentially the same. There is usually a history of trauma, if tuberculous in origin or of trauma plus infection, or of septic trauma, in the case of the latter. The acute stage cannot be differentiated by röntgenoscopy from other inflammatory processes of bone. The chronic stage can, however, be easily differentiated from syphilis, sarcoma, cyst, etc. The early stages of this disease are characterized by areas of increased translucency while in chronic stages, the involucrum can be easily demonstrated, with evidence of necrosed myelin, irregular and thickened periosteum, with thinned and irregular corticle; the lesions as a rule being most marked in the epiphyseal region.

Syphilis: Bone involvement is fortunately infrequent, but in the absence of a painstaking clinical history and subjecting the blood of the patient to a Wassermann reaction, a differential diagnosis is difficult.

Syphilis manifests itself in two ways—Periosteal and myelogenous gumma. In periosteal gumma, the shafts of the long bones are occasionally affected, but more frequently the short bones, as the metacarpal and metatarsal bones. There are multiple areas of translucency, the periosteum thickened, and cortical portion remaining, while myleogenous gumma causes corticle to be thickened, areas of inclosed translucency and enlargement of the bone region affected. Of course, now we have the assistance of the Wassermann reaction, and within a day or two such conditions can be positively classed, according to the result of the Wassermann reaction of the patient's blood.

Bone cysts are rather common, but can be easily differentiated, usually occurring in the extremities of the long bones as radius, ulna, humerus, etc. The cystic area appears as an enlargement of the bone wall, thinned and regular in outline.

This brings me to the most important, to my mind, of all osseous tumors or enlargements. There is usually a small enlargement of the bone and, with close questioning, usually a history of a trivial injury, negative Wassermann, etc.

Sarcoma usually affects most frequently the long bones, the maxilla, turbinate bones, etc.

So many times the patient and physician are so apt to consider both the enlargement and symptoms to be the result of a rheumatic joint or bone and will take treatment for same while every hour such an individual is inch by inch slipping to his grave; so many times to both the patient and his physician is the true nature of the disease determined where the condition fails to respond favorably to treatment. Then the

patient seeks consultation; and if the consultant is on the alert, the history of injury, often trivial in nature, can be elicited. The Wassermann reaction is negative, and the X-Ray shows, as expressed by Beck of New York, who drew the following conclusions from a study of 107 cases of osseous sarcoma, as stated in his words: "The writer feels justified in saying that in osteosarcoma the outlines of the bone always appear more or less abnormal and indefinite, some areas appearing entirely translucent."

Periosteal sarcoma appear in the skiagraph as a thickened condition of the periosteum, usually occurring in the long bones. In my experience the diseased margins are sharply defined. The enlargement at first appears laterally, which sooner or later may encircle the bone and is characterized by a translucent area with osseous trabeculæ penetrating and ramifying the tumor. Periosteal sarcoma is the most malignant form of bony growths.

Myelogenous sarcoma appears in the medullary portion of the long bone as a translucent area. The corticle is thickened, the periosteum is at first smooth, but sooner or later becomes involved and irregular. The osseous tumor as a rule is more or less sharply defined as outlined by the X-Ray.

Many writers speak of differentiating the various cellular types of sarcoma, namely, round, spindle, and giant cell, according to the texture and density of the tumor area as it appears in the skiograph. This I have never been able to do, and think I shall be satisfied to diagnose the malignant nature of the tumor with sufficient accuracy to warrant immediate radical procedure.

From the foregoing facts I urge each of you when dealing with a bony enlargement to keep ever in your mind the possibility of it being of a malignant nature, and it should be kept under close observation with repeated X-Ray examinations to ascertain whether or not the enlargement is increasing in size with noticeable enlargement of the veins on the surface and the rapidity of the growth. By all means have the parts thoroughly examined by a competent röntgenologist and repeated pictures made from time to time, until the exact character of the tumor is defined. A Wassermann reaction should be performed, a careful clinical examination and history taken and, if necessary, exploratory operation performed, removing a portion of the tissue involved and subjecting it to microscopical examination.

The X-Ray plays the same part in bone disease in making a positive diagnosis as does the microscope to the kidney and intestinal diseases. Only in few instances is the microscopical examination absolutely positive in its diagnosis, independent of the clinical findings, but when the

microscopical evidence is linked with the clinical picture many times it makes a doubtful diagnosis a positive one, and *vice versa.*

The same is true of the X-Ray. Absolute dependence free of all other research and evidence cannot always be attached to X-Ray diagnosis, but when the diagnosis of the X-Ray is again linked with the clinical side of the case, many a puzzling case is made plain and an uncertain diagnosis is made positive. In this way many limbs and lives have been saved as a consequence. This is especially true in the study of the most common diseases of bone as described in this paper, hence my desire to again bring this important means of study of bone diseases before the members of our Medical Society.

DISCUSSION

Dr. G. W. Pressly, Charlotte: I think that this is a most excellent paper of Dr. Pittman, and it draws attention to the very important use of the X-Ray, and one that we are coming to utilize more and more. A tumor of the jaw was differentiated by an X-Ray, and it was not necessary to make a resection and saved the patient the removal of his lower jaw.

Dr. R. L. Gibbon, Charlotte: This paper suggests something that I have always tried to bear in mind—namely, that many of our errors of diagnosis are not so much the result of want of knowledge as of failure to use what we really know. The investigation of the case is not thorough, and we too easily fall into the rough and ready diagnosis. To mistake such cases as the writer refers to for rheumatism or neuritis is often done, but it is a serious error.

Dr. Parrott: It has occurred to me that it is now ten minutes past one, and it might be best for the surgical section to continue this meeting this afternoon at a later hour than is on the printed program. I mean when we adjourn for lunch that we meet again at three o'clock instead of 2:30, and this will give us two hours before the five o'clock session, at which time there is a lecture to take place in this same hall.

Dr. Bitting: I second that motion.

Motion carried and meeting adjourned until three o'clock.

THE DEVELOPMENT OF PATHOLOGY AS A SCIENCE

T. M. West, M.D., Fayetteville

Pathology as a distinctive branch of medicine is of comparatively modern date and unwelcome as the thought may be in the present state of national temper, it is to the German school as represented by Vir-

chow that we owe its present high standard. Up until modern times morbid anatomy had been hampered by ignorance of anatomy and befogged by fantastic, unsupported theories which were put forth in dogmatic form and were defended with all the arrogance and bitterness of men jealous of their reputations for infallibility. Any question raised touching the validity of their claims was met with a storm of bitter invective and ridicule which the luckless objects of the attacks found hard to combat. The development of general science including optics and chemistry aided greatly in providing an armamentarium as a solid basis for discovery, but only in the recent years have we seen the spirit of hearty coöperation and openmindedness exerting its beneficial influence. Today a man's eminence gains him a respectful and eager hearing but the full reward is withheld until ample proof is forthcoming.

Thus is exemplified the difference between the mediæval and modern viewpoint. Today as we meet for mutual benefit in friendly discussion, it may be profitable to look back and review the defeats and triumphs of the past, its errors and ofttimes heroic struggles for the truth so that we, enjoying today the fruits of the labor and travail of these men often broken in health and embittered by controversy, may more fully realize the richness of our inheritance.

The scope of this paper does not permit of a full account of the work of all who are worthy of mention and no attempt will be made to cover the ground exhaustively, but we will simply touch upon the labors of a few whose achievements make the brightest spots in a great firmament.

To Morgagni of Padua (1682-1771), a pupil of Valsalva, must be given the credit for the first attempt at a work on pathology consisting as it does of the contribution of a lifetime collected in five books of letters written in an easy, flowing style. His observations consisted of clinical records checked up by *post mortem* findings embracing a vast number of cases. He uncovered many obscure and heretofore unknown diseases. Herein he gives the first description of syphilitic aneurism and endocarditis, tuberculosis of the kidney, clinical significance of solidification of the lungs in pneumonia. His observations on general syphilis are epoch-making.

Matthew Bailey (1761-1823), a Scotchman, published a work on morbid anatomy in 1793, which seems to be the first attempt to treat pathology as a separate branch of medical research.

He described accurately for the first time hepatization of the lungs in pneumonia, gastric ulcer and ulceration of Peyer's patches in typhoid fever.

Thomas Addison and Thomas Hodgkin, Englishmen, who though

they were brilliant physicians made valuable contributions to pathology as discoverers of the diseases bearing their respective names. Addison also described accurately pernicious anemia in 1848.

The founder of cellular pathology and inseparably associated with the rise of modern medical science is Rudolph Virchow, a Pomeranian, born in 1821 who after a life full of honors died in 1902. In 1847 he founded the first *Journal of Pathology,* in which he took the modern position that no one man is infallible in his judgment and that "an unsupported hypothesis is a very leaky bottom for practical medicine to sail or trade on." He was a bold and aggressive writer, not alone in medicine but upon political subjects as well and the ardent champion of the under dog. His utterances soon brought down upon him the heavy hand of the Prussian hierarchy. In 1849 he was deprived of his professorship in Berlin and compelled to leave the city but was recalled in 1856 and entered upon a most distinguished career. From 1880 to 1893 he was a member of the Reichstag and was the ardent champion of the rights of the people. He served with distinction in the war of 1870. In 1899 he gave the Pathological Museum of Berlin 23,066 preparations each his own, labeled, catalogued and mounted by his own hand. He has had no superior and few equals. He first enunciated the doctrine held today that there is no specific cell of disease but only perversions of natural physiological types. One of his theories, viz., that there can be no diapedesis of blood cells was disproved by Conheim, his pupil. His discoveries in thrombosis and embolism were revolutionary. Though aggressive in controversy, he was always generous of achievement and no praise was more lavishly bestowed than that which he heaped upon Pasteur and others, both predecessors and contemporaries.

Virchow's most distinguished pupil was Conheim (1837-1884), whose first important contribution was the outcome of his experiments of serous inflammations and suppuration, finally proving his contention opposed by Virchow, that there was a diapedesis of white blood cells. To this was added papers on venous stasis and embolic processes. His crowning achievement was the successful inoculation of tuberculosis into the anterior chamber of the eye of the rabbit.

Koch a year or two before had brought out his treatise on anthrax and Conheim prophesied that the former would lead in the field of bacteriology. Koch's bacteriological researches mark a tremendous stride in this branch and as a laboratory technician he has never been surpassed. In 1878 his monograph on traumatic diseases with the life history and pathology of six different surgical diseases marked him as a leader. His cultural methods (1881) and the promulgation of his

"postulates" loaded him with honors at the hand of the Prussian government. He received the Nobel prize in 1905 and in the following year headed the commission on sleeping sickness in Africa. His later years were clouded by domestic troubles and he lost many friends.

A contemporary of this period was Louis Pasteur (1822-1895) the discoverer of the treatment for rabies. A native of France, he began his career as a biological chemist and for a long while his investigations were conducted under the patronage of the government which saw certain industries, notably wine, beer and the silk-worm threatened with destruction. His studies of the microorganism involved led to the discoveries in preventive vaccination. Many of the bacteriological discoveries of Conheim and Koch were verified by him.

Another bright star whose course has but recently been run is Elie Metchnikoff, the Russian savant, whose chief contribution is his theories on phagocytosis and autointoxication which enabled Wright and others to perfect the practice of vaccine therapy.

Passing to the other side of the Channel, the figure of Lord Lister (1827-1912) looms large. This kindly and gentle Englishman was and remains England's greatest surgeon. He is remarkable not only for his bold and aggressive surgery but for his revolutionary methods in antiseptics, taking away from the operative procedures many of their terrors. He gave the death blow to the theory of laudable pus and opened the way for the rapid development of abdominal and visceral surgery, an almost forbidden field until then.

In a review of this kind, the attention of the student is struck with the preponderance of Teutonic names. The English and French of the period did not have the purely scientific bent exhibited by the Germans. The tendency there as now was more humanitarian than scientific. The trend was more toward the clinical side of medicine and very few after the time of Addison and Hodgkin were pathologists. On the other hand the Teutonic passion for detail and specialization gave them the lead in purely research work. This bent has always been fostered by the government and backed by ample funds from the imperial treasury.

In this country, such men as Welch, Carrel and Flexner have contributed much to the advancement of medical science and with the help accorded by such institutions as the Rockefeller Institute, we may confidently expect America to take her place in this field as she has in other branches of scientific investigation.

SURGERY

CARREL-DAKIN SOLUTION AND PARAFFIN DRESSINGS IN CERTAIN CONDITIONS

L. W. Kornegay, M.D., Rocky Mount

You are all more or less familiar with Carrel-Dakin solution; if not from practical experience, at least you have read the literature which has been voluminous both for and against its adoption in general. Any preparation that is so highly praised by its advocates surely tempts us to give it a thorough trial before putting it aside, even though the adverse criticism is severe.

Our limited experience with its use in infections has caused us to dispense with former procedure and to adopt it as a routine. Its superiority has manifested itself in every instance. Although we have not obtained the brilliant results of Dr. Carrel, we have at least considerably improved in results obtained over former methods.

The Carrel-Dakin method consists in the use of a fluid hypochlorite of sodium solution 50 per cent strength, as prepared by the formula originated by Dr. Dakin. In Dr. Keen's work on *The Treatment of War Wounds,* he presents two formulas given him by Dr. Dakin. One is prepared with and the other without boric acid. The preference seems to be given to the latter, but is more difficult to render neutral on account of the commercial chlorinated limes not being constant in strength. "Neutral hypochlorite prepared with boric acid is best made as follows: 140 grms. of dry sodium carbonate (NaCo) or 400 grms. of crystallized salt (washing soda) are dissolved in twelve liters of tap water, and 200 grms. of chloride of lime (chlorinated lime) of good quality are added. The mixture is well shaken and, after half an hour, the clear liquid is siphoned off from the precipitate of calcium carbonate and filtered through a plug of cotton; 40 grms. of boric acid are added to the clear filtrate, and the resulting solution is ready for use. A slight additional precipitate of calcium salts may slowly occur, but it is of no significance. The solution should not be kept longer than one week. The boric acid must not be added to the mixture before filtering, but afterwards. The solution should be tested for neutrality by adding some of it to a pinch of solid phenolphthalein. If a red color, indicating free alkali, should develop a little more boric acid must be added in order to remove it."

"Neutral hypochlorite prepared without boric acid is best made according to the formula given by Daufresne, and at the present time,

is perhaps more generally used than any other modification. 200 grms. of good bleaching powder are put in a twelve liter bottle with five liters of tap water. The solution is shaken vigorously and allowed to stand for at least six hours, unless a mechanical shaker is used, when half an hour's shaking will be found sufficient. In another vessel 100 grms. of dry sodium carbonate and 80 grms. of sodium bicarbonate are dissolved in five liters of cold water and then added to the bleaching powder mixture. The whole is shaken vigorously for a few minutes, and the precipitate allowed to settle. At the end of half an hour the clear solution is siphoned out and then filtered through paper. The proportions given above for the carbonate and bicarbonate of soda are those given by Daufresne. It is our experience, however, that with most brands of American bleaching powder it is best to use 90 grms. of each salt. This solution must invariably be tested for neutrality by adding a pinch of solid phenolphthalein to a little of the solution. If the solution should react alkaline one of the three methods must be employed to correct: (a) Pass carbon dioxide gas into the solution until a sample shows no alkalinity when tested as described. This is perhaps the best method. (b) A neutral hypochlorite may be secured by reducing the proportion of carbonate of soda and increasing the bicarbonate. (c) Boric acid may be added until neutrality is secured. An advantage of the carbonate bicarbonate preparation is that it possesses greater stability and can be kept for several weeks without much deterioration. On the other hand, with varying qualities of bleaching powder, containing different amounts of free lime, it is more difficult to adjust the proportion so as to obtain a neutral solution directly. Probably those having adequate laboratory facilities will prefer the carbonate bicarbonate solution, while the mixture containing boric acid is readily made under less favorable circumstances."

The object to be attained is, "An ideal isotonic wound antiseptic of high bacterial and low toxic or irritating quality." Under 45 per cent is too weak and above 50 per cent is too strong.

The Carrel technique in preparing the wound is very thorough and complete; it consists in the removal of all debris and excision when possible of all mangled and destroyed tissue, placing perforated rubber tubes in wound so that all affected surface may be bathed with solution at intervals of two hours, as its antiseptic strength is lost in a little less than two hours. Dependent drainage is to be avoided because this precludes the object desired of keeping all parts of wound constantly bathed in solution. Every second day bacterial counts are made from smears to ascertain when the field is sterile. When microbes are absent for three successive counts the wound is considered sterile and may be

closed as if it were a clean operation with the expectation of primary union. Our experience with the solution in infected wounds of all kinds has been very pleasing.

What I desire to especially emphasize is its use following paraffin dressings in infected burns and chronic ulcers of leg. We have had occasion to test it in several cases and have not been disappointed a single time. The rapid cleansing and sterilizing of the wound surface, the conspicuous absence of pus after a few days, the early presence of islands of epithelial tissue over the raw surface which quickly spreads and unites to form smooth and pliable skin without subsequent contracture, relieves us of the necessity of skin grafting. After wound becomes a clean, granulating surface, paraffin having been applied, we allow patient to be up as the paraffin extends some distance beyond the edges on healthy skin, thus acting as a support that practically immobilizes the affected area, therefore, doesn't seem to lengthen the healing process. I wish to present four cases as an illustration of results obtained by being treated in this manner:

Case 1. Male, white, age 3 years. Family history, no interest.

Present History.—Clothes were burned from body two weeks previously, caught from fire under washpot in yard. Inspection showed extensive burns over body, especially over lower abdomen, right thigh, and leg, extending almost to ankle, completely around upper thigh, penis and scrotum involved. When patient entered hospital was in a highly septic condition, burned area covered with sloughing gangrenous tissue, foul and fetid pus, temperature 105.4 degrees F., pulse 150.

Treatment.—Applied an abundant dressing of gauze and cotton over affected area; had nurse to wet same with Dakin solution every two hours; renewed entire dressing every twelve hours. The temperature stayed up to between 104 to 105 degrees F. until after the dressing had been changed three times (about thirty-six hours), then gradually subsided until fifth day was ranging from 98.5 degrees to 100 degrees F. At this time surface seemed to be free of pus and sloughs practically all away. On ninth day we dried granulating surface thoroughly and applied paraffin, changing every twenty-four hours. Before reapplying would flood surface with Dakin solution and dry. After first application he would cry for it to be put back on. The only pain experienced from the Dakin solution was the drying; he would invariably go to sleep immediately after the dressings. Expected to skin graft, but in few days could see islands of epithelial tissue forming over the granulating surface, and within five weeks it was completely covered with good skin. Nine months since he left hospital there is no evidence of contraction; he has a splendid result.

Case 2. Female, negro, age 26 years. Admitted to hospital for operation necrosed bone of foot. While reacting from anesthetic received very bad burn on calf of leg, from hot-water bottle, about 3½ by 6 inches in diameter.

Treatment. Removed skin from blister immediately; kept saturated with Dakin solution for twenty-four hours; then applied paraffin as in other case.

The burn did not lengthen her stay in hospital, as it was well by the time other wound healed.

Case 3. Female, negro, age 39 years, weight 200 pounds. Was referred for relief of ulcer of leg, long standing. Right leg presented three ulcers ranging in size 1, 2½, and 3 inches in diameter; left leg, two ulcers 1½ and other 3¼ inches in diameter; both legs edematous and inflamed. The ulcers had a wormeaten appearance with dirty gray granulations. This patient had been treated by several physicians, been kept in bed as long as six weeks at one time, but they never healed.

Treatment. Curetted all ulcers thoroughly; put on gauze and cotton compress; instructed nurse to wet with Dakin solution every two hours; changed compress every twenty-four hours. At end of ten days the ulcers were filled with healthy granulations; then commenced paraffin dressings. After two weeks allowed in chair, began walking at three weeks. Taking into consideration the weight of this woman and long duration of ulcers, consider this a very satisfactory result.

Case 4. Female, white, age 43 years. This patient consulted me for relief of an ulcer of left leg, 1½ inches in diameter. It was highly inflamed and very painful. Her doctor told her to go to bed, use vaseline, and it would soon be well. When I first saw her she had been in bed two weeks with no relief of pain and cellular infection. The ulcer presented a very angry appearance with an area some distance beyond quite swollen and inflamed.

Treatment. Gauze and cotton compress wet at two hour intervals with Dakin solution. Within forty-eight hours all acute pain relieved, with little soreness. Kept in bed one week with wet dressings; then began paraffin, allowing her to be on her feet. At end of three weeks she was well.

In conclusion, will say that I believe if you will get rid of the infection in ulcer and surrounding cellular tissue with Dakin solution, that healthy granulations will rapidly appear; the paraffin dressings will greatly facilitate epithelial growth; thereby relief from skin grafting, obtaining the desired result with less pain and discomfort to the patient —a cure.

Dr. Parrott: Dr. L. W. Kornegay, who is chairman of this meeting, is absent and Dr. Faison has asked me to preside in his absence. I have Dr. Kornegay's paper, and if there is no objection I will turn that over to the stenographer and ask that it be printed in the report, and disposed of in that way. Dr. Kornegay is a member of the Exemption Board, and a large number of people are being examined for the second draft, and it was not best for him to leave home on account of his duties in connection with that.

The third paper is Maj. J. W. Long's, and as that paper is to be illustrated, I will suggest that we pass that paper for the present and take it up at five o'clock when the operator of the machine will be here to illustrate Colonel Owen's paper. So if there is no objection we will pass that paper until the last and have that in connection with the paper and lecture by Colonel Owen at five o'clock.

The next paper is by Dr. Crowell of Charlotte. He is at the meeting and will probably be in in a few minutes. We will pass to the fifth paper which, I believe, is by Dr. E. T. Dickinson. We will treat him with the same courtesy. The next paper is by Dr. Hill of Durham, and he is not here. Dr. Crowell is coming in now. He is from a small town in Mecklenburg County—Charlotte. I always gain information from his papers that help me, and I get an inspiration also from him. While he lives in a small town he can do just as good work as any man in Baltimore. Speaking seriously, Charlotte was a small town until Camp Greene went there, but Dr. Crowell is bigger than Charlotte.

DIAGNOSIS OF URETERAL CALCULI AND TECHNIQUE OF REMOVAL WITHOUT OPERATION

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Of the Crowell Urological Clinic, Charlotte

The purpose of this paper is to describe our technique of removing ureteral calculi without operation and to discuss the importance of an early diagnosis and the methods of making same. This plan of removing ureteral calculi was mentioned in a paper read by Dr. Crowell before the Urological Section of the American Medical Association at its meeting in San Francisco but the technique was not fully described because a sufficient number of cases had not been treated by the method to justify us in making any special claims for it. After an elapse of three years and having treated thirty-one cases since then in this way we are now prepared to assert that practically every recently impacted ureteral calculus can be removed by this plan if begun before the secretory power of the kidney is inhibited.

Anything which interferes with the elimination of the kidney's secretion, whether it be inflammation, organic change or impacted stone, produces a hydronephrosis with the ultimate result of pressure, atrophy and destruction of the renal function. Any obstruction, whether it be partial or complete, lowers the kidney's resisting power and predisposes to infection. Infection with obstruction means kidney disintegration.

Edwin Beer says that he found sufficient kidney functional activity, after the ureter of dogs had been tied off for three weeks time, to justify an attempt at secondary implantation of the ureter into the bladder but after three or four months time nothing was left but a small fibrous mass provided infection had not taken place. This emphasizes the importance of early diagnosis and treatment not only from the standpoint of removing the stone but also preservation of the kidney.

A knowledge of the presence, size, and location of stone is important but it is also necessary to know whether or not the ureter is completely occluded by its presence. This information can be obtained only by ureteral catheterization and radiography. To illustrate, we will show some slides of phleboliths which so resemble stone that they can be differentiated only by radiography and the bismuth ureteral catheter.

Again, there are so many conditions, such as gallbladder disease, gastric and duodenal ulcer, appendicitis, ovarian and intestinal disturbances, which might be mistaken for ureteral calculi that we feel one is hardly justified in operating for any of these conditions without first having taken advantage of the knowledge obtained by their use. This is certainly true of abdominal pain in the right side, subacute or chronic in character. We have a high leucocoeyte count with ureteral obstruction and kidney infection as well as in appendicitis or gallbladder disease. We will not enumerate the clinical symptoms since they are so typical that their rehearsal would be superfluous.

Having spoken of the importance of an early diagnosis, we will now discuss our plan of treatment and briefly report a series of cases.

The points of election for ureteral stone impaction are, first, at the junction of the ureter with the kidney pelvis, second, at the pelvic brim, and third, just above the ureteral entrance into the bladder.

The plan of treatment is dependent upon, first, the location and size of the stone, second, the length of time impaction has persisted, and third, the amount of damage done the kidneys' secretory power by back pressure or infection, or both. If the obstruction has been complete, without infection, for a period of three months the kidney's secretory power is destroyed and the stone's removal by our method impractical. If infection and disintegration has taken place, the condition is surgical and its discussion is out of the province of this paper.

This method to us was original, as we had seen nothing in the literature recommending the use of cocaine for the removal of ureteral stone previous to that time. Since then a great deal has been written about the use of local anesthesia, electrically heated catheters, special ureteral dilators, fulguration, etc. Our results have been so uniformly good with cocaine, novocain and oil, that we have preferred perfecting out technique in this plan of treatment.

It occurred to Dr. Crowell while endeavoring to remove a ureteral calculus from the ureter of a patient February 2, 1915, that the pain might be relieved and the muscular fibers of the ureter relaxed by injecting a solution of cocaine at the site of the impacted stone. Accordingly, two cubic centimeters of a 2 per cent solution of cocaine was injected. In two or three minutes time the spasm was so relaxed that the catheter

easily passed beyond the stone. Ten c.c. of sterile olive oil was injected and the catheter removed. Cystoscopy, on the following day, demonstrated the presence of the stone in the bladder. We were thus encouraged to continue its use and have worked out the following technique:

A No. 5 bismuth catheter is passed into the ureter until it meets with resistance. A radiograph is taken to further ascertain the location and size of the stone. (If urine is obtained through the catheter, it shows that the obstruction is incomplete and that the kidney is functioning.) Two c.c. of a 2 per cent solution of cocaine is then slowly injected at the site of impaction. In three or four minutes the catheter is passed beyond the stone and ten c.c. of sterile oil is injected. If we fail to get the catheter beyond the stone, the oil is injected with considerable force against it in an effort to dislodge same as well as to lubricate and dilate the ureter below the stone. The patient is kept well under the influence of morphine, put to bed and instructed to drink water freely to stimulate the kidney's functional activity and in this way assist in expelling the stone. Urotropin should be given in large quantities.

This technique is repeated every second or third day, its frequency depending upon the patient's tolerance of instrumentation. The size of the ureteral catheter should be increased at each treatment to dilate the ureter. We frequently use sizes up to 14 F. A stone too large to be removed in this way is surgical and should be so handled. It is astonishing, however, to see what a large stone can be removed by this plan.

Of our last thirty-one consecutive cases of ureteral calculi, we have operated upon but two, and these were cases which came to our clinic just after we had instituted this method. We now believe we would have succeeded in removing these without operation had we persisted in the treatment.

The calculus was demonstrated cystoscopically in each of these cases or recovered by the patient's voiding through gauze. Absence of the obstruction was further demonstrated by the unobstructed passage of the ureteral catheter and permanent relief from the symptoms.

The X-Ray was negative in twelve of these cases. This shows that we cannot depend upon radiography exclusively to make the diagnosis of ureteral calculi. Of these cases, four received one, two two, six three, four four, two five, two six, and one eight treatments before the stones were recovered. Most of the cases were referred, were chronic in character, and required a greater number of treatments than the more recently impacted ones would have required.

In conclusion, we will say that it has been variously estimated that from 40 to 60 per cent of ureteral calculi will pass spontaneously if the patient is kept under the influence of morphine and left alone. We

believe that practically all recently impacted stones can be removed by our plan if the treatment is properly carried out and persisted in sufficiently long.

DISCUSSION

Dr. Long: I want to congratulate the Surgical Section of our Society on having heard this paper by Dr. Crowell. In the first place the paper is by one of our distinguished members and it represents original work. We all feel proud of the splendid work Dr. Crowell is doing along this line. However, there is one point to which I wish to call Dr. Crowell's attention. If I understand Dr. Crowell correctly, he says that the only way in which a ureteral stone can be differentiated from the phleboliths is by its relation to the bismuth catheter. I think I can illustrate what I wish to say better if Dr. Crowell will kindly have a certain one of his slides thrown upon the screen again. In this slide there are two things to be noticed: In the first place, the shadow of the phleboliths is much more sharply outlined than is true of ureteral calculi. Another point you will notice which is shown on the slide is that the shadow of the phleboliths is not in line with the ureter. These two points are additional aids in helping to differentiate the phleboliths from ureteral calculi.

Dr. Parrott: While we are waiting for the slides, if there is any discussion of Dr. Crowell's paper, let's hear from it now.

Dr. E. T. Dickinson, Wilson: I have had a little experience in removing these stones in this way. I find it quite satisfactory when I can reach the stone and give it a little oil and see it come down. This is a very satisfactory treatment, and I am glad to see it thrown on the screen.

IMPROVEMENTS IN SUPRAPUBIC PROSTATECTOMY

E. T. Dickinson, M.D., Wilson

Reviewing the literature coming out on this subject in the last few years I find it so voluminous that my time may be well spent in giving the bibliography and the principal aims of the various writers.

The standard of suprapubic prostatectomy of all operators is based on Freyer's operation, and Freyer recently had the exceptional and pleasant experience of seeing alive his first two patients. The general aim has been to reduce the mortality.

Improvements have been made along the following lines: First, selection and preparation of patients; second, the anesthetic used in these old people usually disqualified in many ways for taking anesthetics; third, prevention of shock; fourth, prevention of hemorrhage; fifth, adequate and dependable drainage; sixth, comforts in after treatment.

In selection of cases more has been done to include than to exclude patients formerly considered inoperable. A more or less prolonged period of catheterization or other method of drainage combined with flushing of the kidneys by forcing copious drinking of water and urinary antiseptics has greatly improved the function of the kidneys as has been proven by the very accurate and satisfactory phenolsulphonephthalein test. Short and local anesthetics of nontoxic character allow inclusion in the operable list many who formerly would have been excluded or would have died with operation. The operation by the improved technic of enucleation requires not more than ten minutes of anesthesia. This may be nitrous oxide and oxygen, which is nontoxic and which has some effect towards preventing shock. Or it may be entirely local or spinal, or it may be local anesthesia for the abdominal incision and sacral anesthesia for the enucleation. I especially like this latter combination for very old and feeble patients.

Special efforts have been made by Crile and Lower to prevent shock by injecting weak solutions of novocain in large quantities around the sites of incision and enucleation. This method is of great value in borderline cases, frequently giving a most surprising recovery.

The prevention of hemorrhage and the consequent shock is now known to be most important, and various methods and devices have rendered this complication more and more rare, until now the experienced operator feels safe in the ordinary case allowing easy enucleation. It should be borne constantly in mind that only prostates of adenomatous hypertrophy admit of enucleation. It is constantly borne in mind that the blood vessels are numerous only in the true capsule. The false capsule is only a layer of compressed prostatic tissue and contains no blood vessels. Therefore, it is very important to find and follow the line of cleavage between the prostatic tissue and the false capsule, at no point injuring the true capsule. If this is successfully done much trouble will be avoided from shock and obstruction by blood clots. Many methods of applying pressure for hemostasis after active hemorrhage have been described. All of these are no doubt good, but prevention here is better than cure, and my experience has been so satisfactory that I have had no need of these. The Lower method of turning in the raw surface of the capsule against the raw surface of the prostatic urethra and packing gauze firmly behind it around a catheter in the urethra appears to be the best method.

The site and size of the drainage tube is of the greatest importance for the comfort and rapid convalescence of the patient. The nearer the fundus of the bladder the sooner will the patient be able to void. The

larger the drainage tube the less the chance of obstruction by blood clots. The tube should never be less than three quarters of an inch in diameter. It should have two large openings in the sides, and the lower end should not extend very near the bottom of the cavity. Also the catheter, if one is left in the bladder, should extend well toward the fundus of the bladder and the end should be suspended by a thread brought out through the drainage tube so as to hold it above the surface of the blood clot.

Many devices have been proposed for the comfort of these patients in the way of keeping dry and allowing an earlier getting out of bed.

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TYPHLITIS—APPENDICITIS

With Report of Some Interesting Cases

J. W. Wallace, M.D., Concord

The term *typhlitis* comes from a Greek word, meaning cecum, and the Latin word *itis,* meaning inflammation; therefore, inflammation of the cecum; while the term *appendicitis* comes from the two Latin words, *appendere*, meaning the appendix, and *itis,* inflammation; therefore, inflammation of the appendix.

The term *typhlitis* was formerly used until the time of Fitz and Parker, for the condition now called appendicitis, but at the present time we have differentiated the two conditions, and have learned that we can have typhlitis without appendicitis, and appendicitis without typhlitis, or we can have the two conditions at the same time. However, the differentiation here between the two conditions is absolutely necessary in order to be able to appreciate the treatment to which we will refer presently.

Within the last ten years we have seen the development of an immense amount of surgical literature devoted to the etiological, pathological and clinical significance of the true and adventitious mesenteries of the abdominal viscera.

The number of cases that have not been relieved of pain in the right

lower quadrant by an appendectomy is a constantly increasing quota of our surgical patients. The change from the 1½ inch incision to the larger and more ample abdominal incision has brought about a closer operative inspection of the accessory surgical fields and has revealed a number of symptom-producing aberrations of structure.

These observations on the living have been combined with extended dissections on the dead, all tending to elucidate the anatomical conformation of the abdominal viscera in the fetus, the child and the adult. And, as a result, we are beginning to arrive at some definite surgical conclusions.

Now, in order to get a clearer impression of the pathological conditions which take place in typhlitis, let us freshen our minds, briefly, with some of the anatomical conditions, and structure as well, of the cecum.

The cecum, as you well know is the large blind pouch, or cul-de-sac, situated below the ileo-cecal valve, in which the large intestine commences. Its blind end is directed downward, and its open end upward, communicating directly with the colon, of which this blind pouch appears to be the beginning or head, and hence the old name, *caput cecum coli,* was applied to it. Its size is variously estimated by different authors, but on an average it may be said to be two and a half inches in length and three in breadth.

It is situated as we well know in the right iliac-fossa, above the outer half of Poupart's ligament, and rests on the ilio-psoas muscle and lies immediately behind the abdominal wall. As a rule it is entirely enveloped on all sides by peritoneum, but in certain number of cases, about 6 per cent, Berry says, the peritoneal covering is not complete, so that a small portion of the upper end of the posterior surface is uncovered and connected to the iliac fascia by connective tissue. The cecum, normally, lies quite free in the abdominal cavity and enjoys a considerable amount of movement, so that it often becomes herniated down the right inguinal canal, and has occasionally been found in an inguinal hernia on the left side. I, myself, have frequently removed the appendix through my incision made for operating on the gallbladder.

It was Treves who so kindly divided the cecum into four different types, as follows, briefly:

1. The cecum is conical, the appendix rises from its apex, the three longitudinal bands start from the appendix and are equidistant from each other.

2. The conical cecum has become quadrate by the growing out of a saccule on either side of the anterior longitudinal band. These saccules are of equal size, and the appendix arises from between them

instead of from the apex of the cone. This is found in about 3 per cent of cases.

3. This type is the normal type of man. Here the two saccules, which in the second type were uniform, have grown at unequal rates, the right with greater rapidity than the left. In consequence of this an apparently new apex has been formed by the growing downward of the right saccule, and the original apex with the appendix attached, is pushed over to the left, toward the ileo-cecal junction. The three longitudinal bands still start from the base of the appendix, but they are now no longer equidistant from each other, because the right saccule has grown between the anterior and postero-external bands, pushing them over to the left. This type occurs in about 90 per cent of cases.

4. The fourth type is merely an exaggerated condition of the third; the right saccule is still larger, and at the same time the left saccule has been atrophied, so that the original apex of the cecum, with the appendix, is close to the ileo-cecal junction, and the anterior band courses inward to the same situation. This type is present in about 4 per cent of cases, and this is the type that gives us the most trouble, known as typhlitis.

The deviations from the normal are protean in character and may be classified as of congenital, mechanical, or inflammatory origin. This then would bring us to a point to consider many or various conditions that would tend to produce intestinal, or cecal stasis, and naturally we would consider then first of all cecal adhesions.

The most noteworthy of these anatomico-pathological findings, are, (1) nonrotation of the cecum and large bowel; (2) unusual mobility of the cecum—cecum mobile—associated with distention and later atony of the bowels; (3) the pericolonic membranes, either cecal, colonic, splenic or meso-sigmoidal, the most notable example being the so-called Jackson's membrane; (4) the so-called adventitious mesenteries of Lane, the most prominent being Lane's kink, and the hepatic, and splenic mesenteries.

Symtomatically, these conditions have been considered under the generic designation of chronic constipation or obstipation and seem responsible for the various abdominal symptoms formerly considered without an adequate anatomical or pathological basis.

A better name for the syndrome of symptoms associated with these adhesive bands is chronic intestinal stasis. This condition manifests itself by three well defined sets of symptoms: local, general and remote. The local signs and symptoms are those of abdominal pain, tenderness, and gastric disturbances, such as hyperchlorhydria, flatulency, etc., together with a varying degree of constipation.

The general symptoms are those of a colonic intoxication and are due to the presence in the circulation of a number of enterogenic toxins. The presence of these toxins in the circulation results in certain definite degenerative changes in several tissues of the body. The skin becomes thin, inelastic and wrinkled with an abundance of offensive perspiration especially in the axilla and groin. There is a progressive loss of weight, the circulation enfeebled and the blood pressure is low. The ears, arms and legs are habitually cold even in the warmest of weather. There is marked loss of abdominal fat with the development of a flabbiness of the muscular system with the subsequent formation of a variety of visceral ptoses. Headache is common, usually of the occipital or frontal type; there is development of induration in the upper and outer zone of the breast, usually the left side, and later this induration becomes more marked, undergoes cystic and inflammatory changes with intra cystic proliferations and finally the development of cancer. This picture may exhibit itself in a variety of forms and is undoubtedly the basic element in some of our cases of splanchnic neurasthenia.

The remote signs are those incident to the development of endocarditis, nephritis, tubercular infection, and as Goldthwaite, Painter and Osborne, have shown the development of a variety of arthritides due to the focalizing of septic materials in the joints or to injury to the synovial membranes from the defective elimination of toxic end-products derived from the intestines.

Now, coming back to the adhesions of the cecum, the most important one to be found on or about the cecum is the so-called Jackson's membrane. It takes its origin from the parietal peritoneum and spreads fanlike down over the ascending colon and cecum with or without implication of the appendix, and suggests a new adventitious vascular investing layer of peritoneum. It terminates at the inner border of the colon and appears to embrace the colon and cecum in a much too restricted diaphanous bag, thereby giving definite points of compression or constriction. In general, this membrane exerts a malign influence by offering points of relative stenosis to the fecal current and in restricting the action of the circular and longitudinal fibers of the colon and in addition it maintains a rather firm fixation of the colon to the posterior abdominal wall. As a result there is fecal stagnation with fermentation and the production of gas, then, of course, there would be a distention of cecum and colon with traction upon the parietal peritoneum and development of pain from peritoneal traction. The appendix in most of these cases is small and sclerotic, but occasionally shows a capillary dilatation suggesting a subacute inflammation. This latter would seem to be a coincidence rather than an associated finding.

By these membranous restrictions the cecum is exposed to mechanical conditions that are not normal, for upon the removal of this membrane the colon is released, elongates to nearly twice its restricted length and the fecal current is unimpeded. A secondary effect of this anchorage is the degenerative changes, ulcerations, mucous colitis, and typhlitis, resulting from the absorption of toxic material.

As a next door neighbor to what has been described, is the so-called Lane's kink, which is a flat band passing from the under surface of the mesentery of the terminal ileum to the adjacent aspect of the ileal circumference and gradually creeping around it until it has reached and bound down the antimesenteric border of the bowel. This cicatricial contraction of the peritoneum forming the posterior layer of the mesentery drags upon the ileum at a point about two inches from its termination.

The anchored portion of the ileum is not only kinked in one plane, but its lumen is reduced by torsion of the bowel itself on its long axis. This results in a distention and dilatation of the proximal ileum which may extend up to the pylorus.

There are in general three main explanations offered for the development of this condition. They are the mechanical, congenital, and inflammatory ideas.

Lane believes that the pericolonic membrane is an accessory mesentery formed to prevent the descent of the distended cecum into the pelvis. This tendency to falling is opposed by the formation of two series of resistances which develop as independent bands of peritoneum. The external group representing what we have described as Jackson's membrane, the inner representing the typical ideal kink of Lane.

This explanation presupposes a general visceroptosis consequent upon man assuming the upright position in the course of his evolution.

The congenital idea is extremely attractive and is ably championed by Mayo, Connell, Flint and Gray. Mayo believes that these films are congenital defects due to "a late rotation of the bowel and descent of the cecum from its hepatic situation."

After the formation of the parietal portion of the peritoneal cavity in the infant the cecum burrows its way into position, through the peritoneum. Flint believes that there is "in embryonic life, when the cecum is in the subhepatic position, an excessive attachment between the parietal peritoneum and the lateral and ventral aspects of the cecum and the colon. With the subsequent descent these adhesions are drawn out into a thin membrane represented by the pericolonic membrane of the adult," the parallelism of the blood vessels representing the axis of descent.

Another opinion as to the congenital origin is that of Gray, and Anderson, and that is that Jackson's membrane is simply the right margin of the great omentum which ordinarily reaches as far as the hepatic flexure. At the hepatic flexure during development the omentum may become adherent to the dorsal parietal peritoneum, opposite the flexure and along the outer side of the ascending colon.

During the descent of the cecum this part of the omentum becomes drawn out, usually losing its fat, and the vessels assume a linear parallel arrangement.

The third origin is that of the inflammatory origin. That these membranes are the result primarily of a long continued form of mild infection, Corner has called attention to the fact biologically the cecum is the second resting place for the alimentary contents; that it is here that the fluidity is diminished and where bacterial life is at its utmost. In addition, the reaction of the ileal contents have changed from an alkaline to acid.

We may therefore summarize certain facts about the cecum. That we have (1) normal, or exaggerated stasis; (2) maximum bacterial life; (3) acidity; (4) fermentative and putrescent changes. We know that bacteria can traverse an irritated or a congested intestinal wall without there being any distinct lesion to the intestinal wall. Heyde, by extensive cultural experiments, has demonstrated that the bacteria on the margin of a beginning peritoneal exudate are chiefly anaerobes and that the colon bacilli are secondary invaders. The cultural difficulties being so great may explain the dearth of bacterial information concerning the pathology of the membranes.

Another interesting coincidence is the fact that bacilluria is more common in the female, and as Bishop has shown, in a one-sided bacilluria, there is an overwhelming majority on the right side. In connection with this clinical finding we know that Franke has demonstrated a definite lymphatic system between the cecum, ascending colon and the right kidney. In addition it is a matter of common clinical knowledge that pericolonic membranes are in the vast majority of cases in women.

It would seem, therefore, from a consideration of these facts, that there is a distinct pathology sequence between involvement of the kidney from cecal infections and the development of pericolonic membranes.

There is, however, one very strong argument against this idea, and that is that the lymphatics from the bowel run inward with the mesocolic vessels, and there is usually no evidence of thickening along the lymphatics accompanying the mesocolic vessels. There is, however, no reason why an inflammation should not manifest itself externally by Jackson's membrane and internally by renal infection.

Whatever may be our opinion in regard to the ethiology of these adhesions, there can be no question that they have a distinct pathological significance and manifest themselves by a demonstrable symptomatology.

In considering the clinical signs of these cases as a group, we are impressed with the surprising uniformity of symptoms. So uniform are these symptoms as to render the condition a clinical entity.

Naturally, however, there is some variation in the symptoms which is dependent upon (1) the extent of development of the membranes; (2) the degree of fecal stasis in the cecum; (3) the fermentative changes and secondary distention with muscular atony; (4) the actual amount of toxic absorption manifesting itself in general or remote symptoms, and when expressed in the superlative degree giving a well-defined symptomatology of splanchnic neurasthenia.

The first and most prominent symptom is pain, which may vary from a dull ache to attacks of severe cramplike pain and interrupted by periods of freedom. This pain is diffusely localized over the right side and may extend from the spine posteriorly to the mid line anteriorly and latterly from the costal arch to Poupart's ligament, and is a pain made worse on excessive exercise. The noteworthy feature of its distribution is the inability of the patient to focalize the pain. The pain to a great extent resembles that of chronic appendicitis. The pain is always relieved by free catharsis, but this is only temporary, and the pain readily recurs.

In this condition there is no associated fever, or acceleration of the pulse, and there is a distinct absence of abdominal rigidity and muscle spasm while the abdomen itself may show a more or less diffuse distention. There is a history of well-marked constipation. Occasionally periods of constipation, intermit with a diarrhea of short duration in which some mucus is passed. Over the region of the cecum gurgling is a constant finding; a "splash" may sometimes be obtained. Some of these cases show reflex gastric disturbances of such intensity that the gastric symptoms may dominate the picture. The gastric symptoms vary from a sense of fullness or oppression, with eructations of gas to the pyrosis, burning and pain of a hyperchlorhydria or ulcer. In the later stages there is almost always a depressed secretory and motor function. Systemically there is usually a progressive loss of weight and a general muscular atony.

X-Ray examination of the large bowel after a bismuth meal is invaluable, especially with a supplementary enema of bismuth as the emulsion is carried around to the cecum in a few minutes by a retrograde peristalsis, so when the colon and cecum are prolapsed, or con-

stricted, or where there is a definite angulation, the X-Ray picture will offer a satisfactory interpretation.

The differential diagnosis must eliminate chronic appendicitis, cholecystitis, gastric and duodenal ulcer, prolapsed kidney, ureteral stone and intrinsic diseases of the intestines. A careful consideration of the history and evolution of symptoms will usually render the differential diagnosis not difficult.

Summarizing all that has been said about typhlitis, we find that any of these conditions that tend to aid or assist fecal stasis here in this anatomical gap, of the cecum, the bagged or sagged pouch, thereby producing an accumulation of a gelatinous mass, septic, fermentative or what not bringing on muscular atony of the pouch, thereby unable to empty itself properly, then we have the whole condition at hand.

The treatment of this condition is of twofold, medicinal and surgical, and of the two the surgical has proven itself worthy of consideration here. The operation here is the one devised by myself, typhlopexy, by which I have gotten excellent results.

The operation consists of taking the cecum, ileum, colon and the appendix, removing the appendix, and then carefully examining the cecum, ileum and colon, freeing them from constriction or adhesions, and then taking the cecum up in my hand and passing five, six or eight sutures of No. 8 surgical silk through the serous and muscular coats, starting the sutures well above the anterior longitudinal band of the cecum, and passing well back toward the posterior longitudinal band; also bringing the purse-string of the inversion of the stump of the appendix well out to the outer side, thereby inverting as much as possible the lower border of the pouch. The results you can readily see in a cross section.

This does away with this stagnant pouch and gives tone to the muscular fiber of the walls of the pouch, thereby making it active and able to empty itself under normal physiological movements of the cecum.

Case 1. Mr. G., age 38. Family history negative. He had a chronic pain in his right iliac-fossa, had his appendix removed eight years ago. He says that he still has the same pain that he had previous to his appendectomy. X-Ray examination after a bismuth meal combined with a supplementary enema of bismuth demonstrated quite a large sagged or bagged cecum and a considerable stasis of the current. I operated on him and found the condition to be of the cecum altogether with no constriction or adhesions, and so I did my typhlopexy. This was March, 1916. No pain has recurred yet.

Case 2. Mrs. E., age 34. Family history negative. Diagnosis: tumor of the left fallopian tube. She also complained of considerable pain in her right iliac-fossa, resembling chronic appendicitis. Operated; removed a two-pound cystic tumor of the left F. tube, and found the right tube and ovary normal; so

looked for the appendix and found only a button-shaped condition of the cecum, but just the same condition of the cecum existed as did in Case 1, so I did my typhlopexy on this cecum. This was done in April, 1917. No pain in right iliac-fossa since.

Case 3. Mr. B., age 40. Family history negative. Diagnosis: appendicitis. Operated in November, 1917. This case had a typical Lane's kink with the cecum bound down to the posterior abdominal wall by a thin band, with a large dilated external saccule, which was quite noticeable. The appendix seemed to be a normal one. Removed the appendix, broke up the kink and adhesions, and did my typhlopexy on this dilated saccule of the cecum. No pain since.

Case 4. I have here cases of three boys which I have just recently operated on, 5, 6, and 8 years old, respectively, all of which had a well defined Jackson's membrane. I did the appendectomies here with the freeing of the parts. The appendix here was diseased in each case.

DISCUSSION.

Maj. J. W. Long, Greensboro: I have enjoyed Dr. Wallace's paper very much. He is to be congratulated on his knowledge of the extensive literature on the subject which he discusses. However, there is one statement which I wish to correct, though I trust that Dr. Wallace will not think I am criticizing him.

It may appear to be egotistical in me to call attention to this matter, though as a matter of fact, from a personal standpoint, it really makes no difference, but as a Fellow of the North Carolina Medical Society, I cannot allow entire credit to go to Dr. Jackson for priority in the so-called Jackson's membrane. Therefore, I wish to say that twelve years before Dr. Jabez Jackson had ever written a word about this pseudo-peritoneal membrane, I had described the condition and reported a case with illustration, publishing same in the *International Journal of Surgery* and in the *Transactions of the American Association of Gynecology and Obstetrics*, in 1896. After Dr. Jackson published his epoch-making paper upon the same subject (1908), I sent him a reprint of my early article and wrote upon the margin of the illustration, "How is this for a Jackson's membrane?" Dr. Jackson replied, in a very courteous letter, saying, "There is no doubt but that you saw the real thing."

Hence, you see, I am jealous for my State Medical Society, and wish to go on record as saying that the first article, and the first illustration, ever published on this subject was by an humble member of the North Carolina Medical Society.

Dr. Parrott: Is there any further discussion?

Dr. Aiken: I just wish to say that I have heard Dr. Jackson refer to Dr. Long's article, and he thought it was the prevailing work along this line.

Dr. Parrott: Any further discussion? If not, Dr. Wallace will close the discussion.

Dr. Wallace: I just want to thank Dr. Long for his few kind words in regard to the paper and to offer apology. I did not know of this history before.

SUBTOTAL HYSTERECTOMY: INDICATIONS AND TECHNIQUE.

L. S. Booker, M.D., Durham

That there exists much female invalidism there is no doubt, some of which resulting from sins of commission and some from sins of omission on the part of the surgeon should not exist. This is my apology for the title of this paper.

I know of no condition requiring more judgment at times than when and when not to do a hysterectomy. In the first place let us remember there are certain well defined contra-indications to the operation, viz., in the words of Dr. Royster, "where the woman and not the womb is out of fix, therefore the necessity for a gynecological diagnosis." Broadly speaking, the chief indications for removal of the uterus is when it ceases to functionate and is the seat of disease. In other words, any uterine condition causing sterility and in which the life and health of the woman is at stake, a hysterectomy is not only justifiable, but demanded. In fact those distressing symptoms of menorrhagia; metrorrhagia and dysmenorrhea, no matter if resulting from infections, traumatism, deformity or new growths, if accompanied by sterility, can best be cured by hysterectomy, and should be, unless by other means we feel assured of restoring the important functions of conception. The operation fulfilling these indications is the subtotal of hysterectomy. If the cervix is healthy and no reason to fear its ultimate degeneration, it should be left. Myomectomy is advocated by some as the operation of choice. This may be true in a few cases. However, from the standpoint of end-results let us remember that after the enucleation of a fibroid in the procreative period of life, a woman is twenty times more likely to grow more fibroids in her womb than to conceive successfully.

However, in young women considerable uterine tissue should be left, as too complete removal of the womb results disastrously in bringing about atrophy of the ovaries. Now, there are those who advocate the use of rays and radium in fibroids particularly, but until sufficient time has elapsed to know their ultimate results the treatment of choice which produces satisfactory end results must still remain subtotal hysterectomy. The fact that these rays destroy the function of the ovary is sufficient to condemn them already. To be equally condemned is the practice of some surgeons in removing both tubes and ovaries in pelvic inflammatory disease and leaving the infected uterus. This is certainly a sin of omission and more to be condemned than not operating at all. Not only do they leave an infected and diseased organ, but one without a function, and like other functionless organs, viz., the gall bladder and appendix, becomes a nuisance, and always prone to give trouble. The womb should always accompany the tubes when their removal is necessary. This is as far as conservative surgery can go. While the uterus is often rendered functionless and is well to be rid of, the ovary is never functionless, and no matter how badly diseased some ovarian tissue should be retained, except possibly in malignant disease. The operation of subtotal hysterectomy is so simple and is done so often and so well by all of us, hardly necessary to dwell on technique. However, I will mention one or two points on which depend the ultimate results.

I prefer a mid-line incision, moderate Trendelenberg position, bladder and bowels empty. If the patient is well relaxed and the womb freely movable, no packing off is needed. The womb is lifted up and two straight clamps placed near the body extending down to the point of amputation. These serve as excellent tenacula, and there is no tearing or soiling of tissues. The broad ligament is now clamped and cut, the round ligament likewise, and lastly the uterine artery is clamped close to the body of the womb and divided. This done on both sides, the operation is practically rendered a bloodless one. The cervix is amputated, leaving considerable peritoneal flap in front to cover over stump. I use black linen to tie vessels as clamps are removed. Now with chromic catgut, each round ligament is securely fixed in stump of cervix and if broad ligaments are long enough they are also sutured to top of stump.

Lastly, the peritoneal fold from the front of the uterus is turned back and sewed to back of cervix. This covers all raw surfaces and gives the pelvis a normal appearance. To sum up, the operation is done as simply as possible, rapidly, without hurry, and bloodless; and, lastly, the stump is securely supported by the anchoring of the round and broad ligament.

BLOOD TRANSFUSION

L. A. Crowell, M.D., Lincolnton

A recent visit to the Mayo Clinic aroused my interest in blood transfusion, and while there I made some investigations on the subject, not however for the purpose of writing a paper, but with the idea of using the method in my own work. At the outset I want to say that I have no apologies to make for going into details in my description of the method of blood grouping and the technic for preparing same for transfusion, as these are so important in the method which I am about to describe.

Attempts at blood transfusion date back to the fifteenth century. The first attempt was made in 1492 in an effort to save the life of Pope Innocent VIII, who was dying of old age, but very little benefit was derived from the operation. Richard Lower, of Oxford University, an able physiologist, was the first to successfully perform direct transfusion of blood. This he did in February, 1665, by means of segments of goose quills interposed between the severed ends of the vessels. Following this, Denys, a French physician, tried the experiment on an insane man, injecting eight ounces of calf's blood into his veins. He slept all night. The treatment was repeated the next day, and the man awoke a sane man. Tidings of this operation spread over all Europe, and every one felt that it was a success and hoped that by transfusing the blood of some mild animal as the calf or sheep, the blood of a madman could be so transformed as to give him the characteristics of the animal chosen. These hopes, however, were soon dispelled, as the patient went mad again. Denys transfused again, but the man died under the operation.

The first real advance in our knowledge of blood transfusion was made by Leocock in 1817, and Blundell in 1825. They drew attention to the results, due to the hemolysis of the blood, when the blood was obtained from and injected into animals of the same species. The direct method was used very extensively during the next few years, but later given up as impractical, because it was too complicated for actual practice, was too often followed by sepsis and thrombosis. In 1886, Cotterill, of Edinburgh, in hopes of avoiding thrombosis, introduced the injection of a mixture of blood and saline, which was the first step toward the citrate method now in vogue. So far as I can learn, Crile was the next to revive the direct transfusion of blood, and by his ingenuity and ability, has done some wonderful work along this line. At the same time, the direct method of transfusion has never become uni-

versally popular, due in part no doubt to the fact that the average surgeon does not possess the technical skill to perform the operation properly. A device, in order to be ideal, should be generally available; it should be simple and easy of execution, hence the advantages of the indirect over the direct method. Other advantages of the indirect over the direct are the sureness of transmission and the indication of the amount transmitted. In my opinion the reason why transfusion has never been universally used is because of the complicated apparatus for its performance heretofore in use. And the above applies especially to the direct method. The equipment for the citrate method consists only of a two per cent sodium citrate solution, a 500 cc. graduate, a glass rod, and an ordinary saline infusion outfit. Bertram Bernheim, of Baltimore, a blood vascular surgeon of national reputation, who has devised many instruments for this special work, read a paper on this subject at the June, 1917, meeting of the American Medical Association, in which he endorsed the Citrate Method of blood transfusion. He came out with the emphatic statement that Lewisohn had revolutionized blood transfusion and that all instruments on the market at the present time, including his own, would from now on be relegated to the past.

The principal indications for transfusion are severe anemia, following hemorrhage, post-operative hemorrhage in patients who are jaundiced, hemorrhage from cord in newborn, poisoning from illuminating gas, in weak and anemic patients before operations, and in hemophilia. The method of transfusion in newborn babies is by way of longitudinal sinus, as recommended by Helmholz, the citrated blood being injected directly into the longitudinal sinus by means of a needle. According to Lewisohn a 0.2 per cent solution of sodium citrate will prevent the blood from coagulating from one to two days, but when this citrated blood is introduced, the coagulation time of the patient's blood is always shortened, which shows that some product has been released by the citrate that did not exist before the transfusion. No transfusion should be done until a preliminary test of the patient's and the donor's blood has been made to ascertain if they belong to the same group. Moss, of the Johns-Hopkins Hospital, was the first to show that practically all people may be divided into four classes, as regards their blood, and that only those should serve as donor whose blood is in the same class as that of the recipient. Children's blood, as a rule, does not become grouped until the end of the second year, and once grouped it rarely changes during the lifetime of the person. Since children's blood does not become grouped until the end of the second year, we need not be so particular in selecting the donor, and can with little risk use the father's or mother's blood. Moss's work on Isoagglutinins and Isohemolysins, written in

1910, marks the beginning of the scientific transferring of blood to patients suffering from various conditions. The work of Moss was so accurate and complete that no one has been able to add anything essential. The only addition that has been made is that the technic of blood grouping has been very much simplified, so that it can be done in a few minutes and only a small quantity of blood is necessary. The test is made as follows: Four small test tubes are used; two of these are filled three-fourths full of blood from the patient and the donor respectively, and the other two are filled to about the same point with a 2 per cent solution of sodium citrate. Into one of the latter is put a few drops of the donor's blood, and into the other a few drops of the patient's blood. After the clot has been thrown down in the first two tubes, you are ready to make the test. Take a platinum loop full of the donor's serum and place on a slide, and add to it a loop full of the patient's corpuscles, which are suspended in a 2 per cent solution of sodium citrate. Repeat the same process with the patient's serum. Examine with low power under a microscope. If the corpuscles are agglutinated by the serum, these bloods do not belong to the same class and another donor should be selected. In an emergency, a donor's blood, whose serum agglutinates the patient's corpuscles might be used and no harm done, but under no circumstances should a donor be used whose corpuscles are agglutinated by the patient's serum. If agglutinated cells are transfused, and no accident occurs, they are taken up by the phagocytes, and are therefore expected to do little permanent good. Symptoms following the transfusion of agglutinated blood are flushing of face, urticaria, slow pulse, becoming rapid and irregular, dyspnea, followed by death, if the transfusion is not immediately discontinued. After testing the blood for syphilis and agglutination, if time will permit, proceed as follows to collect blood from donor: cleanse arm, make sufficient pressure on arm above elbow to make veins stand out prominently, which is best done by using a blood pressure apparatus, pumping until the needle points to from 50 to 80. This amount of pressure insures an even flow of blood, which is important, for otherwise it is likely to clot the needle and cause much trouble. Collect the blood in a graduated glass beaker, which has been previously filled up to the 30 cc. mark with a sterile 2 per cent solution of sodium citrate. Add 220 cc. blood (stirring continuously with a glass rod). Again add 30 cc. solution of sodium citrate (2 per cent) and allow 220 cc. blood to run in, making a total of 500 cc. of a 0.2 of 1 per cent solution of sodium citrate in the blood. Have the patient prepared as for 606, and give just as you would 606, using the same apparatus. It is very important that a large size needle be used when collecting the blood from the donor. The importance of

this is obvious. Citrate and blood mix only after the blood has left the needle. The use of a cannula with a narrow lumen will not permit a free flow, and the blood may clot before it mixes with the citrate solution. Recently, while doing a transfusion away from home, the needles carried with me were too small, the blood clotted in them, and as a result I had to discontinue the operation. An ordinary needle placed transversely in the skin over vein steadies it, thereby facilitating the introduction of the needle for drawing blood.

I see no reason why this lifesaving procedure should not be universally used, since the complicated apparatus for its performance has been practically eliminated.

DISCUSSION

Dr. J. W. Wallace, Concord: I felt a delicacy in discussing Dr. Crowell's paper, as I did not hear all of the paper read, and had no criticism to make, but had an addition to make. This is that Dr. Crowell only mentioned one method of blood transfusion, if I am correct, and that was the citrate method. The other two principal ones are (1) the direct anastomosis by a tube leading from the artery of the donor to the vein of the recipient; and (2) the syringe method. Of these the syringe method is my choice, and I have occasion to use it quite frequently. To use this method correctly you should have six syringes, passing them through a warm, normal saline solution "about the temperature of the body" every time in order to keep the blood from clotting and the syringe from sticking. In this method you have pure, normal blood, and it can be done with ease and very quickly. This method has many values over the other method in its simplicity, etc. I also think that it is very important to select as near as possible a healthy specimen to obtain blood from, and should be guarded against impure blood, especially tuberculosis and syphilitic bloods, and obtain as near as possible a high percentage of hemoglobin.

Dr. J. B. Sidbury: During the past nine months in Wilmington, Dr. Thomas M. Green and myself have given twelve transfusions, all of which were given by the Uuger-Linderman method. This method has been recently described by Uuger in the A. M. A. It is a two-way valve connection, which is changed by turning a top screw. The blood is drawn in a 20 cc. record syringe from the donor through this two-way valve socket. When the syringe is full the screw is turned and the syringe which contains the hot saline and which was connected with the patient's vein, is now connected with the donor's vein and a small amount of saline is constantly inserted to keep the needle clear. The syringe

with the blood is emptied into the patient's veins and top screw turned to connect with the donor, and *vice versa* until the desired amount of blood is inserted. It usually takes about one-half to three-fourths of a minute to draw 20 cc. from the donor, and about the same length of time, or probably a little less, to insert this into the patient's veins, requiring one to one and one-half minutes, the longest duration the blood is in contact with foreign substances.

While the blood is being drawn into and emptied out of the 20 cc. record syringe a constant spray of ether is kept on the syringe to prevent clotting. This makes it quite possible to give 1000 or 1500 cc. of blood with our 20 cc. syringe. We gave 1100 cc. at one time with our 20 cc. syringe. This method gives whole, fresh, untreated blood, and is most simple. In no case did we have any bad result. In every case very definite improvement was noted.

The transfusions were given for the following conditions:

Anemia secondary, septicemia, malnutrition, secondary anemia from malaria, and congenital syphilis. In one case the hemoglobin was increased from 20 per cent to 110 per cent. In a number the hemoglobin came from 30 per cent to 75 per cent and 85 per cent, while their general physical condition corresponded with the increase in the hemoglobin.

With infants under one year we chose the mother's blood, and did not test the blood for hemolysis and agglutination. All patients over one year had their blood tested against the donor's blood before transfusion.

While there are some cases which the citrate method may be the method of choice, the Uuger-Linderman method in most cases seems to me to be simpler and has the added advantage of giving untreated, whole, fresh blood that has not been chilled.

THE SIGNIFICANCE OF THE SIGMOID ADHESION

Hubert A. Royster, A.B., M.D., F.A.C.S., Raleigh

My interest in adhesion of the sigmoid was first aroused by an observation in the management of cases of left-sided pain in women. In 1907 the adherent left tube and ovary of a patient, who had been infected in childbirth were removed; at the same time a marked adhesion of the sigmoid was released and the resulting raw surfaces sewed over. The patient obtained relief. Very soon afterward another patient with the same symptoms and the same pathology was relieved by breaking up the bowel adhesions and stitching them over, without removal of the tube and ovary. The outcome was a paper in 1909 "On Adhesion of Sigmoid to Tube and Broad Ligament as a Cause of Pain in Salpin-

Fig. 1.

gitis."* In this article I called attention to the unjust blame often placed upon the ovary as a cause of pain and the frequent useless sacrifice of the organ.

Three years later (1912), after further experience, I was able to formulate a more definite opinion upon the subject and to present further illustrative cases.† Continued study of these cases led to the conclusion that the sigmoid adhesion might exist with or without pelvic disease, but in either instance furnished the real cause of complaint; that it constituted a definite clinical entity with clear signs which could in the majority of instances be recognized beforehand; that the symptoms could be relieved by an operation designed to correct the mechanical difficulty. The first problem was to determine a group of symptoms leading to a proper diagnosis of the condition. We still depend on these symptoms, all subjective: left-sided pain, high or low, but chiefly low down in the iliac region; painful or difficult defecation (especially during the act) and sometimes a sense of stoppage; constipation, occasionally alternating with a mucous diarrhea, particularly in older patients, and the usual complaints of one suffering from a mild type of intestinal stasis.

The objective signs are never positive. A bimanual examination may include or exclude pelvic disease. If tubal or ovarian pathology is not found and other possible lesions are ruled out, one may be reasonably sure that the symptoms as given are due to adhesion of the sigmoid. On the other hand, even when diseased conditions within the pelvis (and especially on the left side) are evident, sigmoid adhesion should be kept in mind; for this may be the chief or sole cause of the suffering and, if unrelieved, the operation may avail nothing. Careful inspection of the sigmoid at the time of all operations in the abdomen will sometimes save us from the necessity of a secondary procedure. Undoubtedly many times the adhesion is found when not suspected, and it is always difficult to predict positively its existence, but it may be assumed in the presence of the subjective symptoms.

We are not concerned here with the ordinary conditions in which the sigmoid flexure is involved in widespread pelvic infection—a dense, fixed mass. Such adhesions are overshadowed by the pelvic disease and rarely do such patients complain so much of painful defecation as do some of those with less pelvic inflammation and more interference with the sigmoid curve. Of course, the position of this terminal portion of the descending colon may normally show wide variations. It may be attached at different levels; it may be tense or slack. It becomes pathological only when it is adherent in an abnormal position, fixed and per-

*Southern Medical Journal, Vol. III, No. 1.
†Transactions Southern Surgical Association, 1912 (Surg., Gyn., and Obstet.) August, 1913.

manent, and gives rise to symptoms. The typical sigmoid adhesion, according to our observation, is that in which the flexure is either carried far down upon the broad ligament, plastered against the lateral wall of the pelvis or pushed forward over the Fallopian tube. The essential lesion seems to be the production of a kink or angulated loop, pulling the bowel downward just before it turns into the pelvis.

Besides its frequent origin from pelvic infection, two factors—intestinal stasis and faulty posture—contribute largely to the causes of the adhesion. For these reasons the condition is seen principally in women. But men may develop the affection, as proved by four cases in males on our records. The usual etiological conditions having to do with ptoses within the abdomen may be operative in the case of the sigmoid adhesion. Attention has been so constantly directed to lesions in the right abdomen that we have neglected to give the left side its merited notice. Without a doubt many have continually overlooked the possibility of the sigmoid adhesion, though confronted over and over again with patients complaining of left-sided pain.

During the past two years we have undertaken to employ the X-Ray as an aid in the diagnosis of sigmoid adhesion. In the main it has been very useful. There are some possible sources of error. The normal course of the sigmoid may be interpreted as a bend, owing to the personal equation, or the loop may be anteroposterior and so escape observation. We have used both opaque meals and enemas. Both are helpful in very doubtful cases, the meals being vital to exclude lesions elsewhere along the intestinal tract. It can be said that the X-Ray in this condition is valuable as a confirmatory agent—precisely its status in the whole field of medical diagnosis.

Concerning the management of the adhesion it may be pointed out, first of all, that a few of the cases, mild in type, may be relieved by abdominal support, education in posture and laxatives like liquid petrolatum. Perhaps some patients cured by these means never really had the adhesion, but as far as demonstrable the typical complaints of the few are apparently banished by the suggested remedies. Practically all of those who exhibit signs of this affection will need operative interference to obtain good results.

The plan of dealing with the adhesion, practiced from the beginning as now, with slight modifications, may be described as follows: After snipping with scissors (following the "white line") any superficial bands which may cover the bowel or adnexa (Fig. 1) the sigmoid is held upward by the finger or a large pair of closed forceps. This draws taut the adhesion proper (Fig. 2). A pair of clamps is now applied at each end of the band, one near the large intestine and the other near the

Fig. 2.

broad ligament. While these are held apart the adhesion is cut transversely at its middle with knife or scissors. This incision must not be so deep as to injure the vessel lying between the peritoneal layers. In fact, a simple nick through the band may be sufficient. The forceps are then pulled apart until the sigmoid is loosened and the loop assumes a more obtuse angle, leaving a diamond-shaped raw area. Beginning at the lowest point (the middle) there are placed interrupted sutures of catgut (Fig. 3), which close the peritoneal leaves longitudinally, thus lengthening the interval and allowing the sigmoid to drop lower into the pelvis and away from the tube and broad ligament. If the sutures already introduced are not sufficient to cover all raw surfaces, additional ones must be taken to be sure that no denuded places are left. The operation is performed through the ordinary median incision made long enough to secure ease of manipulation with the patient in the head-down position.

When I first came upon the sigmoid adhesion and realized its importance, I made this statement: "The condition is one to be reckoned with." I am more and more convinced that it is a distinct surgical entity and that it is amenable to proper treatment. On our records there are now more than sixty cases, illustrating the manifest symptomatology of the affection and exhibiting to a greater or less degree the possibility of its relief by operation. Through private communications and in public discussions numbers of my colleagues have been able to confirm the reports already made. Attention was directed to the adhesion in many instances by the failure to cure left-sided pain by previous operations only to discover the overlooked sigmoid kink on reopening the abdomen and to secure a cessation of symptoms by cutting and suturing the adhesion as described. Not all of the patients, of course, obtain relief. When the diagnosis is not completely established by exclusion or when the operative procedure is not correctly carried out, good results will not appear.

From the middle of our list there were taken twenty consecutive patients to whom letters were written in March, 1918, asking questions about their condition at that time. These patients had been operated upon from eight months to a year or more previously. Particular inquiry was directed to left-sided pain and constipation. To these letters twelve replies were received, and they have been abstracted as follows, using the patients' own words:

1. "Left side is free from pain; occasional purgatives are needed. I go about half the time without medicine."

2. "My side still gives trouble, more so at time of menstruation and the week after, but I have not been constipated but twice since I was operated on" (18 months previous).

3. "The pain in my side has disappeared, but am still constipated all the time."

4. "I am pretty well, except that I am not relieved of constipation."

5. "My pains are all gone. I am bothered very little with constipation. My general health has improved wonderfully."

6. "I was getting on fine until two years ago. I had a nervous breakdown. I have to take purgatives sometimes."

7. "I think my side is just like it was before you operated on me." (This patient is an epileptic.)

8. "I have been getting on fine since my operation—health better than ever in my life. My pain has all disappeared. My constipation has all disappeared—never have to take any purgatives."

9. "The pain is very much less. Occasionally there is a very bad pain for four or five hours. Constipation is really no better; purgatives are required, and then I have diarrhea alternating with constipation. I believe I have not taken simple laxatives judiciously." (Operation 8 months ago.)

10. "The pain has disappeared. The constipation is better, but I have to occasionally take a purgative. My general health has greatly improved. I am really in better health than I ever remember to have been."

11. "At the present time I haven't the suggestion of a pain and I am but rarely constipated. I have gained flesh—almost too much." (One of the early cases, suffering from real obstipation.)

12. "I am free from pain and have not taken a purgative since the operation." (This was one of the first patients. Her pelvis was negative, but she had a classic sigmoid adhesion. Although obstinately constipated beforehand, she never required a laxative after her operation, even while she was confined to the bed.)

DISCUSSION

Dr. Tankersley: Dr. Royster brings to our attention a condition that is very frequently overlooked, and it is now open for discussion. Is there any further discussion? Dr. Booker can you throw any light on the subject?

Dr. Booker: I do not know that I can add anything to what Dr. Royster has so well said. However, I can say that I fully agree that the sigmoid adhesion is a real clinical entity, and is often the cause of left-

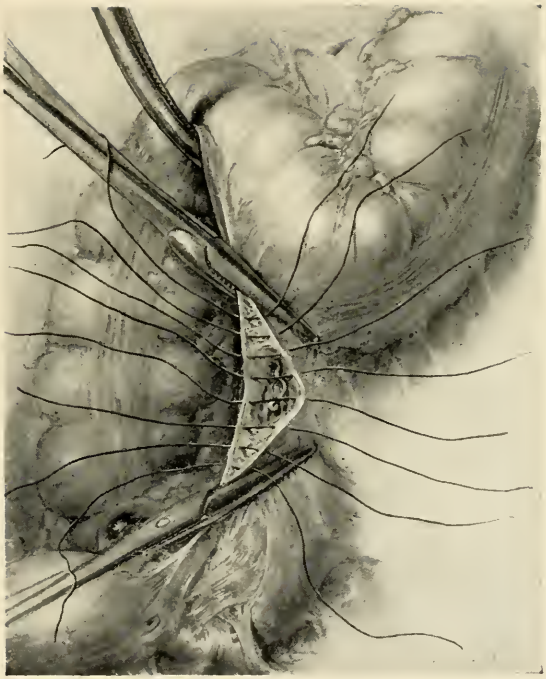

Fig. 3.

sided pain. Another cause of left-sided pain in women and a rather frequent one is varicocele of the broad ligament. In my experience this is frequently met with, especially in multipara and in backward displacement of the uterus. I cannot distinguish an ovarian pain from any other pain, it is all pain to me. In fact I do not think ovaries give much pain. Most of these pains are due to sigmoid adhesions, varicocele of broad ligament, or salpingitis.

ON THE SURGICAL ASPECTS OF TOXIC GOITER

N. D. Bitting, M.D., F.A.C.S., Durham

Two varieties of toxic goiter have been recognized by the pathologists, namely, the exophthalmic and the toxic nonexophthalmic. The distinction between these two types of goiter depends chiefly upon the pathology and symptomatology. The changes which take place in the cells of the parenchyma form the basis for this distinction.

The microscopic picture of exophthalmic goiter is essentially that of progressive hyperplasia—a marked increase in the number of parenchyma cells—which are in the majority of cases hypertrophic. Accompanying this is an overgrowth or stretching of the stroma or an infolding of acinar walls with papillomatous growths into their cavities. Many thyroids in this type of goiter show every portion of the gland in an active hyperplastic state, all evidence of embryonic tissue having disappeared. Both lobes of the gland are enlarged, usually symmetric, though the right lobe is occasionally larger than the left.

In the toxic nonexophthalmic goiter the process is that of regeneration of previously atrophied parenchyma. There is a development of many new acini within the walls of the old, with many layers of small parenchymatous cells. These may be distinguished from primary hypertrophy and hyperplasia by the smaller size of the cells and the absence of papillæ. There is an increase in the secretory activity and absorption, due mainly to the low density of the fluid and the great increase in cellular structure.

The clinical symptoms manifested in exophthalmic goiter depend upon certain toxic substances which seem to act chiefly on the nervous system, the circulatory system, and the eyes. The nervous symptoms usually appear earliest and most often predominate. The onset is, as a rule more or less acute and the course of the disease fairly definite, but later becomes chronic. Cerebral stimulation, vasomotor disturbances of the skin, tremors, mental irritibility, tachycardia, loss of weight, cardiac insufficiency, and exophthalmos combine to produce the symptom-com-

plex. Should the disease be allowed to go on to a fatal termination, diarrhea, vomiting, mental depression, and jaundice will close the scene. The greatest degree of intoxication is reached during the latter half of the first year, and then drops considerably during the next six months. It often fluctuates with periods of exacerbations during the next two to four years.

After the first year the symptoms may be attributed to long continued intoxication rather than to a high degree of acute intoxication. The more chronic symptoms indicate beginning degeneration of the heart, liver and kidneys.

In the case of toxic nonexophthalmic goiter the onset is insidious, the symptoms appearing gradually and usually developing slowly several years after development of the tumor. Nervousness, tremors, loss of weight and strength first make their appearance. Later degenerative changes take place in the blood vessels, heart, and kidneys. The eye symptoms are as a rule absent. The onset may be sudden following repeated administrations and applications of iodine.

The curative treatment of toxic goiter is essentially surgical and may be accomplished in two ways; namely, preliminary ligations of the superior thyroid vessels with subsequent subtotal thyroidectomy; or primary subtotal thyroidectomy. What types of cases require ligation? First, a group of patients having acute severe hyperthyroidism; second, chronic very sick patients who having exhausted the various forms of treatment are suffering from numerous secondary symptoms; third, those cases having marked pulsation and thrill of the thyroid arteries associated with dilation of the heart and loss of weight. By this procedure many patients are converted into safe risks for subsequent thyroidectomy. The superior vessels are generally ligated because they are more easily accessible and a marked improvement takes place in the patient's condition. The ligature is best applied at the pole of the gland around artery and vein. This prevents reversal of circulation by anastomosis with one of the large branches of the inferior vessels. One or both sides may be ligated at the same time as the condition and necessities of the case require. In extreme cases it is safest to ligate one vessel and wait seven to ten days before ligating the other.

Local anesthesia preceded by a hypodermic injection of morphine and atrophine is all that is necessary. Novocain or cocaine one-half to one per cent are very effective.

The question naturally arises as to when the radical removal of a portion of one or both lobes may be attempted. This can usually be done within a few weeks to three or four months according to the patient's condition.

Radical operation is contraindicated in cases of toxic goiter with myocardial changes associated with irregular pulse and uneven tension. Gastric crisis, diarrhea, ascites, edema of feet and hands, severe hyperthyroidism, and acute exacerbations positively forbid radical operation. Most of these cases improve under palliative treatment and later may become safe surgical risks.

The steps of an operation for the removal of a portion of one or both lobes may be carried out as follows: A low collar incision following the natural skin crease going through skin and platysma extending from one external jugular vein to the other will usually suffice. The skin and platysma are dissected up as a single flap exposing the general outline of the gland which is brought into view by dividing vertically between the sternohyoid and thyroid muscles. Should more space be necessary for proper exposure of the lobes the muscles on one side may be clamped high above the nerve supply and cut transversely. The lobes are now elevated so that clamps can be applied to the true capsule of the gland. Here are to be found most of the blood vessels which are clamped and cut. Clamps are now applied so as to include about four-fifths of the lobe leaving about one-fifth of the posterior with that part of the capsule which contains the parathyroids. The portion of the gland within the grasp of the forceps is cut away, the vessels ligated, and the remaining portion of the capsule sutured so as to control any oozing and cover raw surfaces. The cut ends of the muscles are next sutured. The platysma and skin are closed preferably with two rows of continuous sutures. Drainage is practically always employed by surgeons of greatest experience.

The various complications associated with and following operations for the removal of toxic goiter are acute hyperthyroidism, hemorrhage, embolism, pneumonia and sepsis.

As to the results obtained following operations, C. H. Mayo states that about 75 per cent are cured, while the remaining 25 per cent are more or less benefited according to the degree of complication and stage of disease. Probably 10 per cent have some degree of relapse in from one to three years after operation. Patients with an extreme degree of exophthalmos when operated late in the course of the disease may have but partial or no relief from this symptom. Early diagnosis and early operation produces best results.

REPORT OF AN INTERESTING CASE OF EXOPHTHALMIC GOITER

Foy Roberson, M.D., Durham

Mrs. G. D., age 52, was referred to me by Dr. Clarence Jones of Hillsboro. She was admitted to Watts Hospital, Durham, September 4, 1917, and was discharged from the hospital October 4, one month later. She was readmitted January 2, 1918, and discharged January 22, three weeks later. Upon her admission the first time she gave the following history:

Father died of pneumonia. Mother living and in good health. Patient is mother of five children, four of whom are now living. One died of meningitis.

Menstrual History.—Always menstruated regularly. Had some pain with each period before marriage; none after. Was always strong and well during pregnancy. Was delicate during puberty. Had had usual diseases of childhood, such as measles, chickenpox, whooping-cough, etc.

Present Trouble.—About two years ago she began getting nervous and weak. At that time she was going through the menopause so she attributed her trouble to that. However, her condition became progressively worse, and in July, 1917, which was two months before her admission to Watts Hospital, she went to bed and became unable to walk. At this time she began having a very disagreeable bitter taste in her mouth which continued until about the middle of October. During her illness before admission to the hospital she lost a great deal of weight, probably 30 or 40 pounds, had become extremely nervous, could not walk, could not sleep, and could not eat, although she did not suffer any pain except the intensely bitter taste which was just mentioned. Upon admission to the hospital in September her condition was as follows:

Female, 52 years of age. Poorly nourished; in fact, emaciated; complaining of great nervousness, marked muscular weakness, and extremely bitter taste in mouth. Examination showed both pupils normal, reacting normally to light and accommodation. A moderate degree of exophthalmos was present. The mouth was negative except that the patient had lost all of her teeth and was wearing false teeth above and below. Pulse rapid, 140. Marked tremor of hands.

Examination of the neck revealed an enlarged thyroid gland with the right side being some larger than the left. The gland was smooth and soft throughout and upon auscultation a loud bruit could be heard over the entire gland. The patient's body and limbs were emaciated and the tissues very flabby everywhere.

Examination of the chest revealed normal expansion and normal breath sounds over both lungs. The heart was slightly enlarged downward and to the left, somewhat irregular in action, beating about 140 times to the minute with a loud systolic murmur heard at apex and transmitted to the left.

Examination of the abdomen was negative. Before her admission to the hospital Dr. Jones, in consultation with Dr. MacNider of Chapel Hill, had made a diagnosis of exophthalmic goiter and had referred her to us for treatment. Our findings were essentially the same as theirs and their diagnosis was confirmed.

Examination of the urine showed albumin and casts. Blood examination showed 75 per cent hemoglobin, 4,000 white cells and 4,500,000 red cells. Had kidney function of 83 per cent. It was decided that she had better be treated medically for a while in order to find out if her general condition could be so benefited that an operation could be done. She was given absolute rest in bed, ice bag over the heart and usual medicinal treatment. Her diet consisted of very simple, easily digested food, as nourishing as possible.

For about a week it seemed that she was getting better. Her pulse ranged from 110 to 130. The bitter taste became less and she said that she felt much better. However, at the end of a week or ten days the bitter taste returned, she became more and more nervous, had marked tremor of hands, could not sleep, and required sedatives in order to obtain any rest at all. It was very plain that the patient was growing worse and that medical treatment was about to fail. We then considered injections into the gland of boiling water or quinine urea; or operation, either ligating the superior thyroid vessels or a partial lobectomy. It was very evident that any procedure would be dangerous, and as we thought we could take out part of the right lobe without much trouble and probably obtain better results than from any of the other procedure, we decided to do a partial lobectomy. Nothing, of course, was said to the patient about the operation. She was given morphine and hyoscine hypodermically the night before operation and morphine and hyoscine the morning of operation, and under nitros oxide and oxygen anesthesia about two-thirds of the right lobe of the thyroid gland was removed with a minimum amount of shock to the patient. She was returned to bed in fairly good condition and reacted very well although she was highly nervous and her pulse was rapid. In two or three days the pulse became slower, her general condition became better and she said she felt much better. The bitter taste of which she had complained so much was also better and it looked as though she would go along and improve very much. However, it was explained to her family that this improvement

would probably be temporary and that she would have to have another operation, probably in two or three months. Much to my surprise, at the end of one week she became much worse, her pulse was very rapid, nervous symptoms greatly increased; she refused to eat, became intensely homesick and it looked as though she could not last much longer. At the urgent request of her family, and I, myself, thought it would probably be her only salvation, I decided to let her go home. She was taken home in the ambulance and stood the trip fairly well. Her condition remained very bad for several days longer, when she began to improve. All the symptoms which had become so much worse improved, her appetite came back, and in three or four weeks she was able to be out of bed and was apparently gaining weight. This improvement lasted for about two months when, just as we expected, the symptoms began to return and we advised bringing her back to the hospital for another operation. She was brought back to the hospital January 2, 1918, and on January 10 was operated upon the second time. This operation was done under practically the same anesthesia as the first operation, and this time the entire left lobe of the thyroid gland was removed. The operation consumed about 40 minutes. The patient had very little shock, reacted promptly and began to improve almost immediately. She was discharged from the hospital January 23 eleven days after the operation with wound entirely healed and feeling better, according to her own statement, than she had felt in several months. Upon her return home she weighed 80 pounds. It is now three months since her last operation and since that time she has been better in every respect and has gained about 30 pounds.

As to the cause of the extremely annoying bitter taste complained of I cannot explain. Nor have I been able to find any reference to such a symptom in looking up the literature.

SECONDARY OPERATIONS IN THE ABDOMEN

George William Pressly, M.D., F.A.C.S., Charlotte

Among the unpleasant things the operator may be called upon to do is to reoperate on his abdominal case. It is not only unpleasant to the doctor but exceedingly dangerous to the patient. It is one thing to operate on a patient who has been carefully prepared, whose bowels are clean and flat and whose kidneys are in good shape and it is quite another thing to operate on the same patient when the abdomen is much distended, whose bowels have not moved thoroughly in a week and whose kidneys are more or less completely blocked up with waste material. But at times such operations may be necessary to save the patient. They must be done

quickly but not hurriedly, under very light but sufficient anesthesia. They should be done promptly but not unnecessarily. In some cases local anesthesia is best but if the patient is very nervous and apprehensive a light general anesthetic is best.

Among the things that call for a secondary operation may be mentioned hemorrhage, infection, obstruction, fistula and sinus, hernia, continued pain, left-ins.

Hemorrhage may be acute or oozing, the first is very active and requires very early operation, the second is slowly forming and acts oftentimes mechanically and can be operated on at a later time. Such oozing in the wound may be the cause of nonunion and require operation to clean out the clot to allow the raw edges to come together. Fortunately, hemorrhage is not a very frequent cause of secondary operations at the present time, the avoidance of mass ligation or the use of the double ligature when mass ligation is done or the separate ligation of the vessel itself has practically done away with secondary hemorrhage in the abdomen. In operating for hemorrhage we should locate the bleeding vessel or point in the abdomen before going in if possible to do so and the work done with this one point in mind.

Infection is a more common cause for reoperations as unfortunately we cannot prevent it or the patient goes to the first operation with the abdomen more or less full of pus. The serious secondary condition may be due to imperfect drainage at the first operation or extension or pocketing of pus. The difficulty of draining the abdomen in diffuse suppurating peritonitis is well known and in such cases we may expect to have late trouble. Infected tissues about the appendix or in the gall-bladder region and anywhere along the intestinal tract especially along the large bowel when distended with fecal masses as may happen in gunshot cases may give way very easily and allow leaking at the line of suture. Such leaks develop about the fifth day when everything had been going well up to that time.

Infection and hemorrhage may be combined as when a vein is pressed upon by a drain or a ligature cuts through too quickly. Postural or drainage at the most dependent point is the best solution of these cases. In the male the suprapubic and in the female the cul-de-sac drain is the proper thing to do. Certain midline collection of pus may only be drained straight up through the general cavity and in these the chances of later trouble is very great.

Obstruction is the most urgent and possibly the most common cause for a second operation. It may be partial or complete, may come on suddenly or slowly or the complete may gradually pass into the partial or chronic. In the complete cases the treatment is definite and is done

promptly, in the partial we may lose very precious time by waiting as there may be some movement from an enema or some gas may force its way through under pressure. Obstruction may be caused by improperly placed or too bulky drainage, adhesive bands, general infection, or from the condition of the bowels at the first operation as in gunshot wounds. The characteristic symptoms are well known, distention, vomiting soon becoming fecal in the complete cases, pain, pulse fast and thready, facies abdominalis marked. This last symptom is a very important one and Dr. Charles M. Strong of Charlotte places great emphasis on the facial expression in such cases. Temperature is not a safe guide at all. It is most frequently subnormal even in cases due to infection.

The treatment may be enterostomy, breaking up adhesions, and resection. We may do either one of these, or any two, or in some cases all three. In most cases enterostomy is the best and safest thing to do. Obstruction even when purely mechanical is dependent upon the pressure above quite as much as the band or kink. We see these cases clear up from a simple drainage of the bowel above the point of obstruction when nothing is done to the adhesion at all. Breaking up adhesions may tear the bowel and resection takes too much time and is attended with too much shock to be very safe in the severe cases, while an enterostomy can be done safely and very quickly. The operation has been standardized by Maj. John W. Long of Greensboro, so that the details can be carried out in the shortest possible time. In the greatly prostrated and almost moribund case enterostomy is the only operation that should be attempted. In some severe cases even a second enterostomy may be done in perfect safety and for the great benefit of the patient.

A young man obstructed five days after an operation for a badly adherent retrocecal appendix, an enterostomy was done on the seventh day with temporary relief; seven days after the enterostomy complete obstruction was again evident. Dr. Robert L. Gibbon was called in and to my surprise advised another enterostomy. This was done with the breaking up of some pelvic adhesions. The patient made a splendid recovery and is now selling tobacco all over North Carolina in a Ford. In certain cases where the possibility of obstruction is very great the enterostomy may be done at the primary operation, this gives the patient a very comfortable healing period with a flat abdomen, as all gases and toxic material pass off as soon as formed, if they form at all. The enterostomy wound heals very quickly when the tube is removed.

Fistula may be fecal, biliary or urinary. Any one of these may heal spontaneously after a period of time. They may be due to sloughing, slipping of suture, nicking, inclusion of mucous tract in ligature and to

stone. Sinus usually means foreign body, thread or large knot, fecal concretion in the depth of the wound, and very thickened sac wall.

Hernia usually follows free drainage in badly infected cases, prolonged vomiting and coughing after operations on debilitated patients.

Continued pain in rare cases may be an indication for a second operation. The pain may be referred to the scar or to the cavity. The pain may be more or less constant or it may come on after exercise. Painful scars may be caused by catching of certain nerves in the healing. In the cavity the pain may be due to adhesions.

Left-ins usually cause a persistent sinus especially in infected cases. In clean cases healing may be apparently normal and pain or trouble with the bowels or bulging in the neighborhood of the wound will be the suspicious symptoms. With greater care and the use of long gauze instead of sponges in all abdominal cases these cases are very infrequent and will be a matter of historical interest only.

Operations for fistula, sinus, hernia, continued pain, and left-ins differ from those previously mentioned, as for these latter we can usually take plenty of time and the condition of the patient will allow a more deliberate and certain operation. The patient and the site of operation can be prepared so as to get the best chance of prompt healing. These operations do not give any more trouble than a primary operation and in most cases give the same results.

RECENT ADVANCES IN THE FIELD OF NEUROLOGICAL SURGERY, AND ESPECIALLY THE DIAGNOSIS AND TREATMENT OF BRAIN INJURIES

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The field of neurological surgery has so broadened during the past fifteen years as the result of the pioneer work of Horsley, Von Eiselberg and Krause and in this country of Cushing, that a number of neurological conditions which were formerly considered hopeless are now amenable to improvement at least, and in some early cases even a cure may be expected. This advance has been due chiefly to earlier diagnosis, an improved surgical technique and surgical judgment, and to better team work between the surgeon and the neurologist.

Earlier diagnosis of many intracranial conditions is now possible mainly as the result of the more general and intelligent use of the oph-

thalmoscope; it is now commonly recognized and appreciated that the condition of marked papillœdema and "choked disks" is the end result of preëxisting pressure signs observable in the fundus of the eye. No longer is it necessary to wait until a measurable papillœdema occurs before it can be definitely stated that an increase of the intracranial pressure is present; besides the early fundal signs ascertainable by an ophthalmoscopic examination, the most accurate and definite test of an increase of the intracranial pressure is the lumbar puncture using the spinal mercurial manometer; in this manner the ophthalmoscopic findings can be confirmed. Intracranial localization has been greatly facilitated by the most thorough neurological examinations, and yet in many cases the localizing signs are so obscured by the increased intracranial pressure that they can be easily overlooked and they may even be absent; the importance of examining these patients early is obvious. No patient should be allowed to develop a secondary optic atrophy and its resulting blindness while an effort is being made to localize the condition—an unimportant consideration in many cases; an early cranial decompression will save the eyesight and frequently the lesion can be localized later. X-Rays are of much assistance in the diagnosis of many cranial and spinal lesions; by this means, long-continued intracranial pressure signs may also be determined and frequently the site of the lesion indicated; a negative picture especially of the skull, however, means nothing and frequently the interpretation of apparently positive plates is most difficult and at times confusing. Naturally, in cranial and spinal injuries, the value of the X-Ray is very great indeed especially regarding accurate diagnosis, and yet the treatment of such conditions, particularly of brain injuries, depends upon the presence or not of an increased intracranial pressure, whether the skull itself is fractured or not; whereas, in spinal injuries, the chief concern is whether the spinal cord has been irreparably damaged or not—the spinal fracture being of little importance neurologically so far as the treatment is concerned, unless the vertebral dislocation is so great that the spinal cord must have lost its continuity.

An improved surgical technique especially regarding the team work between operator and assistants has been a large factor in lowering the mortality of neurological operations; not only is the rapid loss of blood avoided, the duration of the operation lessened and thereby the shock minimized, but the risk of infection is also proportionately diminished to a point practically *nil*. Naturally, intracranial operations should not be hurriedly done, but they can be quickly and at the same time smoothly and safely performed; there is surely no advantage to be obtained in prolonging the operation either on account of faulty technique or as

a result of such a complicated technique that the final closure of the wound is delayed many minutes. It is rarely necessary for the team to consist of more than the operator, two assistants and a nurse; the anesthetist is a most important member and many disasters in cerebral surgery have been due to faulty anesthesia.

The third important factor in the progress of neurological surgery during the past decade has been due to a better understanding of the neurological condition at operation both by the surgeon and the neurologist at his side. Formerly, the surgeon knew little if any neurology, and the neurologist knew little if any surgery; the result was poor team work and thus frequently the surgical judgment was not the best. Today the surgeon should have at least a practical knowledge of neurological principles—both anatomically and physiologically; naturally a training in neurological pathology is most essential. In this manner a number of mistakes in surgical judgment may be avoided; if the patient cannot be benefited, by no means make the condition worse by an operation.

One of the most important aids to an increased knowledge of neurological lesions, particularly of the brain and of the spinal cord, has been the observation of the living pathology at operation, and if death should occur, then the careful study of the tissue itself at autopsy. During the past three years, a permission for autopsy has been obtained before operation in each case of neurological surgery (both ward and private patients) no operation being performed unless the permission is given in writing—so that if a death should occur, then we shall ascertain the cause of death, and also the accuracy of the diagnosis and the treatment for the benefit of future patients. Naturally, when an operation is advised, it is in the belief that the patient will not die, but if the patient should die, then it is absolutely essential for the benefit of other patients that we ascertain the cause of death in order that possible similar mistakes at least may be avoided. I know of no means so enlightening to the doctor regarding the accuracy of diagnosis, particularly of intracranial conditions, than the postmortem examination; besides the benefit of such knowledge to one's future patients, there is a marked tendency for these examinations to make the doctor humble as to his real knowledge and to keep him in that mental attitude.

If neurological surgery consisted chiefly in the removal of brain tumors it would be indeed a most discouraging field of endeavor. As you know, almost 80 per cent of tumors of the brain are malignant and even though a surgically successful removal of the tumor is possible, yet the end results are the same—the pitiful condition of the patient is merely prolonged; the severe headaches, however, and the impairment of vision

are thus temporarily relieved and even prevented by an early operative removal of the tumor. No patient should be allowed to become impaired visually from the increased intracranial pressure due to the growth of an intracranial tumor merely because the tumor cannot be located. These patients all should have an early decompression to relieve this increased intracranial pressure so that the vision will be spared, and then if the tumor does locate itself later, a successful removal of the tumor may be possible and yet the patient is not blind; I wish to emphasize this point as it is most discouraging to operate upon these cases of brain tumor who have become blind.

Tumors of the spinal cord, on the contrary, are much more favorable in that there is less liability of their being malignant; they can be more accurately located and are more accessible surgically. The operation of laminectomy has become much less formidable within the past few years so that an exploratory laminectomy of a suspected spinal cord tumor should always be advocated early in order to anticipate any permanent damage of a compression transverse myelitis. The frequency of dural tumors of the spinal cord is most hopeful.

The condition of brain abscess has always been a most grave one. It usually results from an otitis media with its subsequent involvement of the mastoid; the usual site is the contiguous temporo-sphenoidal lobe, and less frequently the adjacent cerebellar lobe. As lesions of the cerebellum can be much more accurately diagnosed than those of the temporo-sphenoidal lobe, therefore, if we can rule out a cerebellar abscess, then the site must be in the temporo-sphenoidal lobe—a comparatively silent area of the brain, especially the right lobe in right-handed patients. Formerly the otologists in cases of suspected abscess of the temporo-sphenoidal lobe would puncture the dura in search of the abscess through the "dirty" infected field of the mastoid; as all operations for brain abscess are really exploratory procedures, it is distinctly unsurgical to open the clean subdural spaces and to puncture the cerebral cortex itself through an infected area; if the abscess is not located (and this frequently happens), then the patient runs the big risk of a resulting meningitis and thus the usual occurrence—the exit of the patient. Besides, the dura should not be punctured blindly with a knife or puncture needle unless the dura has been opened so that it can be clearly ascertained whether an underlying cortical vessel is present or not; many disasters from the resulting hemorrhage have frequently occurred from such procedures. It is much more rational surgically and a much better exposure is obtained to locate the abscess if the operative incision is made through the "clean" subtemporal area, just as in a subtemporal decompression—the vertical incision naturally being used; if the abscess is found, then it

can be satisfactorily drained through the lower angle of the incision at the base of the skull; and if the abscess is not found then at least a decompression has been performed so that the intracranial pressure is relieved until the abscess may locate itself clinically, and the great danger of a meningitis and infective meningo-encephalitis has been avoided. In my series of brain abscess cases there are a number of them which I am sure I should have missed surgically if I had not used the better exposure of the subtemporal route.[1]

The condition of cerebral spastic paralysis occurring in children is a most interesting study. In 1843, Mr. Little of London, in his first monograph upon this subject stated that these cases were due to a lack of development of the cerebral tissues and also to an earlier meningitis; he did mention, however, that this condition apparently followed in some cases of difficult and prolonged labor with or without the use of instruments, and were undoubtedly, in his opinion, due to an intracranial hemorrhage; it is very interesting to note that in his second mongraph upon this subject nineteen years later, in 1862, he states that, in his opinion, three-fourths of these cases of cerebral spastic paralysis in children are due to hemorrhage. These observations have been confirmed recently by more modern methods of diagnosis; it was formerly believed that hemorrhage in these cases caused a primary destruction of brain tissues, therefore, no regeneration was possible and thus an operative procedure would be of no value in treating the condition. Within the last five years I have had the opportunity of examining and treating personally almost 1,400 children having the condition of spastic paralysis.[2] By the more accurate methods of differentiating the ones due to hemorrhage from those hopeless cases due to a lack of development and to a former meningo-encephalitis for which nothing really can be done, it is now possible to diagnose the ones due to hemorrhage from these two conditions by means of careful ophthalmoscopic examinations of the fundi of the eyes and by a measurement of the pressure of the cerebro-spinal fluid at lumbar puncture by means of a spinal mercurial manometer; if the ophthalmoscope reveals the signs of a definite increase of the intracranial pressure and those observations are confirmed by the spinal mercurial manometer (the normal pressure of the cerebro-spinal fluid being 5 to 9 mm.), then we have an increased intracranial pressure and if this pressure is relieved permanently by a subtemporal decompression and its modifications according to the condition of the underlying cortex as ascertained at operation, then a definite improvement results in these cases, both physically and mentally. In this series of almost 1,400 cases there was an increased intracranial pressure in about 20 per cent of them, that is, in about one out of every five cases examined,

and these are the ones and only the ones that can be benefited by any operative procedure; I have now operated upon 298 of these children with a mortality of 28 patients (that is 9 plus per cent) and the results have been very encouraging; naturally, the younger the child, the better the prognosis—the first few days of life being the ideal time for the operation, although most of the children have been between four and six years of age; the oldest patient, however, was 23 years of age and a slight improvement resulted. Naturally, a sufficient period of time has not yet elapsed for us to ascertain the ultimate condition of these patients following operation, but their improvement has been so uniform and continuous in the younger children and the pathology of the condition being a hemorrhage *upon* the cerebral cortex and not *in* the cortex itself (in only 16 cases was the hemorrhage in the cortex or beneath the cortex), so that both the physical and the mental impairments are merely the secondary results of the increased intracranial pressure due to this supra-cortical hemorrhage.

The condition of hydrocephalus has been a very interesting one in that it has now been ascertained that the type of internal hydrocephalus is comparatively infrequent and that the type of external hydrocephalus is the usual condition in these cases. They both result from an earlier meningitis (if we exclude those cases of internal hydrocephalus due to tumor formation at the base) and the condition is therefore a diffuse one; if the ventricles are blocked by adhesions or exudate in the aqueduct of Sylvius or at the foramina of Majendie and Luschka, then an internal hydrocephalus occurs, but if no such blockage is present, yet we shall have produced an external hydrocephalus because the cerebrospinal fluid cannot escape from the cerebrospinal canal through the blocked stomata of exit in the cortical veins, sinuses and lymphatics. The methods used in the past and occasionally now advocated of connecting the ventricles with the subdural spaces by means of tubes are therefore of little or no value in the treatment of this condition; even though the lumen of the tube should remain patent (and it rarely does) and even if the condition is one of internal hydrocephalus (which is much more rare than that of external hydrocephalus), yet such an operative procedure will merely be changing the condition of internal hydrocephalus to one of external hydrocephalus and therefore, little or no improvement can be expected. The method recently used for draining the ventricles in cases of internal hydrocephalus and of draining the subarachnoid and subdural spaces in cases of external hydrocephalus by means of linen strands is a much more rational procedure surgically than any of the methods used in the past and its results have been very satisfactory; in the last report of 41 cases the mortality had been only thirteen patients.[3]

The condition of brachial plexus injury causing the so-called brachial birth palsy is the result of trauma to the plexus due to an over-stretching of its nerves by a forceful separation of the head from the shoulder at birth. Undoubtedly if the plexus has not been completely severed, then many patients recover from the temporary paralysis of the arm, but in those children where the over-stretching has been so severe and even to a point of a loss of continuity of the nerve fibres, then a permanent paralysis of more or less degree will result unless the scar tissue resulting from the hemorrhage in and about the plexus is removed and the ends of the torn nerves are anastamosed by an operation. If the arm is completely paralyzed at birth so that not even the upper arm or the fingers can be moved, then the ideal time for the operation is at one month of age (no anesthesia being necessary); if, however, the fingers or the upper arm can be moved slightly at birth, then we should wait until three months of age, and if no marked improvement has occurred within this time, then the operation should be performed. In these children I usually have the mother bring the child to the hospital in the morning, operate upon it, and then have the child taken home in the afternoon. The operation is not a difficult one technically, and there has been no mortality in a series of 104 cases.[4] These patients should not be allowed to reach the age of six years and even older without an attempt being made to improve their condition by an operation; the best results have been obtained in children under one year of age.

In fractures of the spinal column I feel that unless we can prove absolutely that there is a complete severance of the spinal cord or that the spinal cord has been irreparably contused, that we should give the patient the benefit of an exploratory laminectomy within a short time after the accident in order to remove any bony compression, hemorrhage or edema of the spinal cord, and thus increase the patient's chances of a greater ultimate recovery of function. So frequently in patients whom we consider to have suffered a complete severance of the spinal cord with complete loss of sensation and motion beneath the site of the injury, that after three months, six months and even longer, they begin to recover their sensation and also motion of the extremities formerly completely impaired; these patients are the ones upon whom an early laminectomy should have been performed and thus the ultimate improvement would have been much greater than can be obtained at this late date. The operation of laminectomy is no longer the formidable operation of the past and its use should be much more frequently advocated than at present; these patients are most pitiful ones—the end-result, unless something can be done for them, being but a miserable existence of a few years.

The diagnosis and treatment of brain injuries has advanced most rapidly within the last few years. The clinical symptoms and signs are so varied and frequently so confusing in these patients that it is a most fascinating field; apparently in many cases the more extensive the fracture of the skull, the less seriously is the brain injured, and on the contrary, the most dangerous of brain injuries are frequently not even associated with a fracture of the skull. As is well known the fracture in these cases (if we exclude depressed fractures of the vault which should always be elevated or removed) is possibly the most unimportant part to be considered in the treatment, whereas the presence of a marked increase of the intracranial pressure with or without a fracture of the skull should immediately cause the patient to be withdrawn from that large group of patients properly treated by the expectant palliative method, and the advisability of an early operative procedure to relieve the increased intracranial pressure should be considered.

During the three years 1913, 1914, and 1915,[5] I examined and treated personally 239 adult patients having acute brain injuries with or without a fracture of the skull; in only 79 of these 239 patients (that is, 34 per cent) were there marked signs of an increased intracranial pressure, and therefore only these patients were operated upon to relieve this increased pressure, whereas the remaining 160 patients did not show definite signs of an increased intracranial pressure and were therefore treated by the expectant palliative methods of absolute quiet, ice helmet and catharsis; if in shock, then the routine treatment of shock. It is thus seen that only one-third of the patients having brain injuries with or without a fracture of the skull were operated upon, and approximately this same ratio has continued during the past year. It is this careful selection of patients not only in regard to the advisability of an operation or not, and if indicated, then the type of cranial operation used, but of the greatest importance—the ideal time for performing the operation—these factors have made it possible to lower the mortality of fractures of the skull from the average of 50 per cent of most hospitals to 30.7 per cent at the Polyclinic Hospital, and if we exclude the moribund patients dying within three hours after admission to the hospital from shock, internal injuries and in many cases the fracture of the skull being but an incident in the patient's general condition, the mortality is lowered to only 19 per cent.

In the treatment of brain injuries with or without fractures of the skull, if the patient is allowed to develop definite paralysis, a lowered pulse-rate, Cheyne-Stokes respiration and pulse, and that appalling group of extreme intracranial pressure signs, then I agree entirely with the opinion so commonly now held that these patients "get along" just

as well without operation as with operation at this late stage—the mortality being 50 per cent and over; but the patients with brain injuries should not be allowed to reach this dangerous stage of medullary compression due to the high intracranial pressure—it should be anticipated by accurate diagnostic methods now known and if a marked increase of intracranial pressure is ascertained, then an early relief of it should be advised, not only to save the life of the patient but to lessen the posttraumatic conditions of changed personality either of the excitable or the depressed type, persistent headaches, early fatigue, occasionally epilepsy and that long train of posttraumatic conditions in brain injuries and due in the majority of cases to a prolonged increase of this intracranial pressure.

Besides the lowered pulse and respiration rate, which are comparatively crude signs of intracranial pressure and if of the irregular Cheyne-Stokes type, then most late signs of extreme intracranial pressure with its resulting medullary compression, the two most valuable procedures for determining a definite increase of the intracranial pressure are the examinations of the fundi of the eyes with the ophthalmoscope and the measurement of the pressure of the cerebro-spinal fluid at lumbar puncture by means of the spinal mercurial manometer.

Although it is rare for a measurable papillodema and "choked disks" to occur in these cases of traumatic intracranial lesions with or without a fracture of the skull, yet the earlier and therefore milder degrees of an edema of the optic disks should be most carefully "watched for" with the ophthalmoscope as being one of the accurate signs of the presence or not of a definite increase of the intracranial pressure; the ophthalmoscope and especially the direct method is a most valuable means in the diagnosis of cranial lesions. Rarely do these fundal examinations reveal an increased intracranial pressure within six hours after the head injury; this is due to the presence of shock in these patients who later exhibit the marked signs of intracranial pressure; as head injuries are usually accompanied by shock of varying degrees, naturally in these cases the blood pressure is low so that even if a large intracranial vessel was torn, yet there could be only a comparatively small amount of hemorrhage because the resulting increased intracranial pressure would soon be greater than this lowered blood pressure of shock, and therefore the bleeding would cease; however, as the patient recovered from the condition of extreme shock, then the blood pressure would rise, and now more bleeding could occur intracranially until the intracranial pressure would again equal the lowered blood pressure; finally, if the patient survived this condition of shock, blood pressure would be continuously greater than intracranial pressure, so this resulting increased intra-

cranial pressure would produce its characteristic signs in the fundus of the eye—a dilatation of the retinal veins, and an edematous blurring of the nasal halves, and if still higher, then an edematous obscuration of the temporal halves of the optic disks; a measurable papillœdema and "choked disks" occur in these cases only when the intracranial pressure is extreme due to a large intracranial hemorrhage of slow formation, such as the extradural middle meningeal type—just as in brain tumors or when the ventricles are blocked producing an internal hydrocephalus; naturally, if the intracranial hemorrhage forms very rapidly and of large amount, the patient usually dies within a couple of hours so that "choked disks" have very little time to be produced; again, the shock following head injuries usually lasts for about six hours in the patients who survive and therefore it is rare within these first six hours for the ophthalmoscope to reveal definite signs of an increased intracranial pressure; it may be also noted that the patients who do not survive the condition of shock—they usually die within the first six hours. It is therefore of the greatest importance to recognize these early signs of increased intracranial pressure by repeated ophthalmoscopic examinations and to realize that these edematous blurrings of the optic disks are more than being merely within physiological limits; it is true that in cases of myopia there is normally an obscuration of the disk outlines, but these patients can be excluded by the second and following test which should always be performed.

The most accurate means now known for ascertaining the presence or absence of an increased intracranial pressure is the measurement of the cerebrospinal fluid at lumbar puncture by the spinal mercurial manometer. It is similar to a blood pressure apparatus, as safe as a lumbar puncture when properly performed, and by it the varying degrees of intracranial pressure can be carefully recorded. The normal pressure is 5.9 mm. of mercury, so that if a pressure higher than 15 mm. is obtained at lumbar puncture, then we know that the signs of intracranial pressure, as shown in the fundus of the eye, are confirmed. This method of estimating intracranial pressure is most important in the differentiation of the intracranial condition of spastic paralysis due to hemorrhage at birth from those other causes of the so-called Little's disease. In other intracranial conditions producing the extreme stages of papillœdema and "choked disks," and even their end-results of secondary optic atrophy as in neglected cases of brain tumor, naturally it is not necessary to confirm the ophthalmoscopic findings in order to make a diagnosis of an increased intracranial pressure. If, however, in these traumatic lesions of the brain, we must wait until a "choked disk" results from extreme intracranial pressure in order for us to state the intracranial

pressure is high, and if we must wait for the pulse-rate to descend to 60 and below and the respiration and pulse to assume the irregular Cheyne-Stokes character of medullary compression, then undoubtedly the mortality of these patients will be 50 per cent and even higher. Patients should not be allowed to reach this dangerous stage of medullary compression—this stage should be anticipated—and it can be by repeated ophthalmoscopic examinations and the measurement of the pressure of the cerebrospinal fluid at lumbar puncture.

In selected cases of mild intracranial pressure due to trauma, very frequently the convalescence can be shortened, the headaches relieved and the general condition of the patient greatly improved by lumbar puncture, and if necessary, repeated lumbar punctures; not only will the edematous "wet" condition of the brain be drained in this way, but a prolongation of the increased pressure be avoided and therefore the definite danger of posttraumatic conditions, so common in these cases, be lessened. Naturally, this method is only applicable to mild selected cases and lumbar puncture should never be advocated as a means of drainage in patients having high intracranial pressure or in subtentorial lesions for fear of a consequent medullary compression in the foramen magnum.

We now come to the most important and the difficult question in the treatment of brain injuries with or without a fracture of the skull: "If an operation is advisable, when should it be performed?" This question can more easily be answered by stating the two periods when the operation should *not* be performed. Naturally, we must exclude the majority (about two-thirds) of fractures of the skull who do not have a definite increase of the intracranial pressure and therefore no operation is indicated. (The depressed fractures of the vault naturally should always be elevated or removed).

The two periods in which an operation is distinctly contraindicated in cases of brain injury, are, first, the condition of severe shock in the very beginning, and secondly, the condition of medullary collapse—the death knell of the patient. To advise a cranial operation upon a patient —no matter how badly the skull is fractured, nor how extensive the intracranial hemorrhage seems, and that patient is in the condition of severe shock with a pulse-rate of 120 and higher, then the operation at that period of shock takes away whatever chance the patient may have of surviving the shock: the operation is but an added shock and merely hastens the exit. No patient having a brain injury should be operated upon in this condition of shock; the mortality is most high and if a patient does recover from an operation in this period of extreme shock, then he recovers *in spite of* the operation. Cranial operations for brain injuries in this stage of shock were frequently performed in the past

and most disastrously, and thus operations were almost discredited in the treatment of brain injuries. The natural reaction following these early operations in the period of severe shock was to wait until there could be no possible doubt that the patient was going to die, unless, as was thought, a cranial operation was performed; that is, the patient was permitted to reach the period of extreme medullary compression—a pulse-rate of 50 and below, irregular Cheyne-Stokes respiration and pulse and profound unconsciousness—before the cranial operation might be considered. This is a most dangerous stage for these patients to reach, and it is doubtful whether recovery can occur even with an operation at this period—the mortality being very high. But if the patient has struggled through this period of medullary compression, and finally reaches the stage of medullary edema, when the pulse-rate begins to ascend quickly to 120 and higher, respirations become rapid and shallow—that is, the stage of medullary collapse, then we have the second period when no patient should be operated upon—they all die, operation or no operation. I feel that if these two extremes can be avoided and the latter of these, medullary collapse, can certainly be anticipated in the operative treatment of brain injuries and their signs cannot be overlooked, that the rational treatment from an operative standpoint depends upon the presence or not of a definite increase of the intracranial pressure whether there is a fracture of the skull or not; in some of the most serious cases no fracture was present—either to be ascertained at operation in the operated cases, or at autopsy. The aid of the X-Ray is important in the treatment of these traumatic cases only in patients with doubtful depressed fractures of the vault, and in latent fractures of the skull, where the bump is so apparently trivial that the patient might not be so carefully examined and treated as the condition would warrant. On the contrary, no patient with high cranial pressure should be obliged to wait "over night" or for a period of hours merely to secure an X-Ray picture of the skull; it is of no importance in the treatment of these acute intracranial lesions whether a fracture is present or not; if there is a high intracranial pressure as shown by the ophthalmoscopic examination and by the measurement of the pressure of the cerebrospinal fluid at lumbar puncture by the spinal mercurial manometer, then a cranial operation is indicated to relieve this increased intracranial pressure both by enlarging the intracranial cavity and by the drainage of possible hemorrhage and cerebrospinal fluid; it is not so much a question of removing the hemorrhage as it is of lessening the increased intracranial pressure—whether that pressure is due to hemorrhage or edema—the operative indication is the same; many cases of head injuries at autopsy have revealed no hemorrhage at all—merely a "wet" edema-

tous swollen brain, but sufficient to cause medullary compression and the death of the patient.

If an operation is considered advisable to relieve the increased intracranial pressure, then the operation of choice is the subtemporal decompression and drainage[6]; if there are no definite localizing signs of the intracranial lesion, then the decompression should always be performed on the right side in right-handed patients in order to lessen thereby any possible operative damage to the adjacent motor speech area of the left cerebral cortex. In these cases, it is not so important to remove the hemorrhage as it is to offset its pressure effects. In cases of depressed fractures of the vault showing definite signs of a high intracranial pressure, it is better surgical judgment to precede the elevation or removal of the depressed area of bone by a subtemporal decompression so that when the depressed bone is removed there will be little or no danger of the underlying cerebral cortex being damaged by its protrusion through the bony opening; as the subtemporal decompression exposes a comparatively silent area of the brain—a portion of the temporo-sphenoidal lobe—its protrusion and possible damage would not appear clinically, whereas a partial paralysis, impairment of sensation or of vision might occur, and frequently does result from operations performed over the more highly developed areas of the cerebral cortex. Besides, the subtemporal route provides not only an excellent exposure of the middle meningeal artery and that portion of the brain so frequently involved in fractures of the skull, but it affords drainage to the middle fossa of the skull—the chief intracranial cistern—at its lowest point at the base of the skull; again, the thinness of the squamous portion of the temporal bone makes the operation a less difficult one technically. The vertical incision (and not the usual curved incision) should be used not only to render the operative hemostasis more effective in that the trunk of the temporal artery is clamped at its lowest point at the very beginning of the operation and therefore there is no bleeding from its branches, but this incision also permits the removal of the underlying squamous bone as far as is possible beneath the temporal muscle—and yet the attachment of the temporal muscle to the parietal crest is left intact so that a firm closure of its separated muscle fibres is assured; this is a most important point in cases of high intracranial pressure as in brain tumors where a cerebral hernia or fungus might result from an imperfect closure of the temporal muscle. The insertion of silver and celluloid plates and other foreign bodies beneath the scalp is to be most strongly condemned.

If the intracranial pressure is so high that the cerebral cortex tends to protrude through the bony opening, it is frequently wiser in selected cases to perform a similar operation upon the opposite side of the head

immediately after the first operation; I have been obliged to do this in only five per cent of the patients; they are the ones having a swollen edematous brain—"water-logged" as it were, where the drainage of blood and cerebrospinal fluid is slight and not sufficient to cause a marked decrease of the intracranial pressure; in some doubtful cases, it is better judgment to wait for one or two days and even longer, before the second operation is considered advisable. The rubber tissue drains are usually removed on the first or second day post-operative, and the hospital convalescence ordinarily requires at least two weeks. Naturally, these patients should not enter into their former active life for a period of three months and even longer; a too early return to the strain and stress of modern life predisposes them to many complaints—both subjective and objective; repeated examinations of the fundus of the eye and of the superficial and deep reflexes are here most important in estimating the physical normality of the patient.

The end-results of patients having brain injuries with or without a fracture of the skull have been an interesting study. It has become quite a common belief that once a man has had a fracture of the skull and then recovers, he is never the same person again. In 1912, I examined the records of three of the large hospitals of New York City during the decade of 1900-1910; the mortality of fractures of the skull was 46-68 per cent; the mortality of the patients operated upon was 87 per cent—this high percentage due undoubtedly to the operation being postponed until the extreme stages of medullary compression and edema, and also to the fact that the operation performed was the "turning down" of a bone flap—a much more formidable procedure than a decompression—and then the bone replaced so that even the benefits of a decompression were prevented; besides, in many cases, the dura was not opened, and as the dura is inelastic in adults, therefore no adequate relief of the pressure could possibly be obtained. Of the patients, however, who were finally discharged as "well" or "cured," I was able to trace only 34 per cent, but of these 34 per cent of the total patients found, 67 per cent of them were still suffering from the effects of the injury, that is, two-thirds of them were not as well as before the injury; the chief complaints were persistent headache, a change of personality of the depressed or of the excitable type and thus emotionally unstable, early fatigue making any prolonged mental or physical effort impossible and thus the inability to work, lapses of memory, spells of dizziness and faintness, and even epileptiform seizures in a small percentage of them. In examining the hospital records of the patients having these post-traumatic conditions, it was most interesting to ascertain that these were the patients, and there were but few exceptions, who regained consciousness gradually

after several days and remained in the hospital for a period of four weeks and longer, whose charts made frequent mention of the severe headache and a low pulse-rate of 60 and in some cases below 60, that is, the usual clinical signs of an increased intracranial pressure; an ophthalmoscopic examination had rarely been made. Many of these patients still showed the results of the increased intracranial pressure in their fundi and at lumbar puncture, and these were the ones upon whom a cranial decompression even at this late date caused a marked improvement; the operative findings were always associated with a "wet" swollen edematous brain; many of the so-called post-traumatic neuroses are in my opinion frequently superimposed upon this definite organic basis as the result of the brain injury. The treatment, therefore, of brain injuries should not be limited merely to the recovery of the patient as far as life is concerned but it should also be directed toward obtaining a normal individual, approximating as closely as possible the condition of the patient before the injury.

Besides these neurological conditions frequently benefited by operative procedures, there are still other ones in this field that can be only mentioned in the present paper. The excellent results obtained in those cases of persistent trifacial neuralgia which finally, after the failure of all medical efforts, have had the posterior root of the Gasserian Ganglion severed, are possibly the most dramatic; the surgery of the peripheral nerves has also made a marked advance within the past few years and especially is this true of the operative treatment of selected cases of facial paralysis. Of the other neurological conditions amenable to surgical treatment, this work is still in the experimental stage.

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TRAUMATIC BRAIN SURGERY*

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Trauma of the brain is by no means a new subject. It is as old as the mark set upon the brow of Cain, the first murderer. Notwithstanding its antiquity, its importance was never so great in the history of the world as it is today. Therefore, it behooves us to learn all that is knowable regarding the subject in order to prepare ourselves for the task set before us.

My message today is especially to that large number of Southern surgeons who are being called from civil to military service. I would have them go to their new field of activity with that self-same confidence characteristic of the American hero, whether professional or in the ranks. They should know that although they go among strange peoples, speaking foreign tongues, their work as applied to brain surgery involves the same principles which they have been accustomed to follow in treating cracked skulls in railroad camps and pistol shot wounds of the head due to the time-honored custom of toting a gun in one hip pocket and "moonshine" liquor in t'other.

Major M. G. Selig, the editor of *War Surgery,* says in the preface:

> The use of the phrase "war surgery" must be taken with a good deal of qualification, lest one fall into the error of thinking of this type of work as separate and distinct from the surgery of civil life. As a matter of fact the surgical principles governing both are in large part exactly the same. The laws of ballistics, trench life, the terrain of the battle field, the problems of transport, and numerous other incidentals serve to modify established principles of surgery, but not more than that.

If my own conclusions are worth anything, traumas of the brain in military practice resemble very closely the same class of injuries which I have had occasion to observe in thirty-six years of civil practice except in so far as they are modified by the character of the missile and the environment. I am sure the same conviction is held by many of my audience. Every civilian general surgeon, especially in the South, is more or less familiar with head traumas and gains the wisdom of experience in proportion to the cases which have come under his care.

I recently heard a distinguished surgeon, who has seen much war service, deprecate information touching war surgery that was gained in any other way than by personal observation at the front. He spoke of

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knowledge gleaned from medical journals, reviews, etc., as a "correspondence course." However, if we all had to depend alone upon personal observation at the front, the 14,000 civilian surgeons who are already in the Medical Reserve Corps and the 8,000 more who will soon be in service would go to their task poorly prepared and with no adequate conception of the high duties that await them.

In the preparation of this address I have not hesitated to draw from every available source at my command. In this I have been fortunate. About two hundred articles on skull and brain surgery alone have been published since the beginning of the war; several comprehensive reviews on traumatic brain surgery, notably Eisendrath's, have recently appeared; the War Department has issued a monograph of "War Surgery of the Nervous System" and the Clinical Congress of Surgeons, just held in Chicago, was distinctively a war meeting, with a number of papers by eminent specialists in brain surgery. I attended that meeting for the special purpose of taking notes to be used on this occasion.

Those of us who are going into the service to do brain surgery should not neglect any opportunity to prepare ourselves to the utmost for the responsibilities of the work. We should review our anatomy and physiology. Gray's *Anatomy* contains some interesting reading at this stage of the game. We should saturate our minds with the recent literature of the subject which, by the way, includes all kinds of contradictions regarding antiseptics, as well as other things. Whenever possible every one interested must of necessity take advantage of the intensive training generously provided by the Surgeon-General.

I have recommended to the Surgeon-General over three hundred physicians for commissions in the Medical Officers' Reserve Corps. Occasionally some young or middle-aged fellow, never an old man, objects to the military training in the cantonments. I usually tell him the story of Grant and his coon dog. When Grant was a boy he had a pup that he wanted to train to hunt coons. He persuaded his old father to drag a coon skin around the yard for the pup to trail. Being an over-indulgent father, like most of us are, the old man dropped on his all-fours and started off with the coon skin dangling from his neck. As soon as he was out of sight the boy turned the pup loose and sicked him on the trail. The pup soon caught up with the old man and fastened his teeth in his shoulder. When Grant reached his father he was yelling for him to pull the dog off. Young Grant said: "Hold on, dad; I know it hurts, but it's the makin' of the pup."

As you know, every regiment has its own surgeons. Seven are usually allotted to each regiment. The scarcity of surgeons in Europe has been so great that only one surgeon each could be supplied to many regiments.

Let me say here that there is not a more important man in the Medical Corps than the regimental surgeon. He knows the men and they come to know and rely upon him. He eats the same food, sleeps with them, goes into the trenches and over the top with them and, if he is the right kind of a man, the men fight all the better for knowing that he is at hand to succor them, if wounded. Soldiers are said to have a great dread of bleeding to death, and well they may. The morale of most of us would be better if we knew that a good surgeon was within a few feet of us. All honor to the regimental surgeon!

It is here, too, that the ambulance companies get in their splendid work. I am pleased to recall that I was largely instrumental in organizing a Red Cross Ambulance Company at Greensboro composed of five as fine surgeons and one hundred and nineteen splendid men as ever went to France.

Since we are concerned only with brain injuries we shall eliminate all discussion that does not bear directly upon that.

When we remember that 40,000,000 men are under arms, not to speak of the unnumbered millions of civilians within the war zone subject to injury by both land and sea, from the earth beneath and the heavens above, one ceases to wonder that brain injuries are both numerous and fatal. The first American officer to shed blood upon French soil was wounded in the head (October 29, 1917).

Trench warfare protects all portions of the body better than it does the head. It is true that the steel helmet has lessened both the frequency and the severity of brain injuries. This protection is augmented by the blanket padding employed by the English. Notwithstanding every precaution, about 10 per cent of the total casualties are of the head.

There have been many classifications of brain injuries. The following is simple and comprehensive:

CLASSIFICATION OF BRAIN INJURIES

1. Brain traumas without visible wounds.
2. Scalp wounds with no apparent fracture.
3. Tangential, or gutter, fractures of the skull.
4. Depressed fractures of skull from direct blows.
5. Penetrating wounds of brain classified as:
    a. Punctured wounds as from a bayonet.
    b. Missile, as bullet, lodged in brain.
    c. Through-and through wounds.

High explosives play an important part in brain injuries. Leriche reports in detail 99 cases of severe concussion of the brain and spinal

cord in which there was no direct wound. He also saw 397 cases in which a shell fragment merely bruised the scalp. In these cases brain lesions were so frequent that he now operates in all cases. Temoin, in 33 operations for slight injuries, found fracture of the skull in 29. Of 23 such cases operated upon as soon as they reached the hospital, all recovered; of 5 similar cases in which operation was deferred till brain symptoms developed, 4 died. The experience of these surgeons is that of many others.

The following cases illustrate severe injury to the brain without scalp or skull injury that could be detected:

FRACTURE OF SKULL—LATE SYMPTOMS

Patient. R. L. Johnson, Concord, N. C., age 18.

Trauma. Caused by baseball striking right side of head.

Symptoms. Headache. Patient fell, got up, seemed rational, returned home; next day complained of headache, which continued.

Coma. On the fourth day developed semi-coma, which increased to complete coma.

Convulsions. On seventh day had three general convulsions.

Operation. Craniotomy, eighth day, right tempero-parietal region, October 1898.

No wound of scalp nor fracture of external plate. Internal plate fissured; large extra-dural clot, smaller intra-dural clot.

Result. Prompt recovery, healing by first intention; no subsequent nervous symptoms.

DESTRUCTION OF ENTIRE HALF OF BRAIN

Patient. Thomas Willis, Walnut Cove, age 26.

Trauma. Patient was struck on head by foul ball.

Case History. Patient knocked down; arose presently, walked one-half mile to home, told wife he was going to die. Ate supper, went to bed complaining of headache. During the night developed convulsions, semi-coma and by morning complete coma.

Transportation. Next morning was carried 40 miles to St. Leo's Hospital by Dr. A. G. Jones.

Examination. Patient comatose, pupils dilated, pulse frequent and feeble, limbs and back rigid from general spacticity; frequent convulsions.

Head. No wound of scalp nor skull could be found.

Result. Patient died without operation four hours after admission and 30 hours after injury.

Autopsy. No wound of scalp except slight bruising in right temporal region. Outer plate of skull intact. Linear fracture of inner plate; no depression. Right meningeal artery ruptured. The entire right half of brain like scrambled eggs.

FRACTURE OF BASE—LATE OPERATION

(See X-Ray 1)

Patient. Charles Rayle, age 31.

Trauma. Patient knocked to cement walk by awning rail.

Symptoms. Consciousness, slight at first, quickly disappeared.

Convulsions. Three general convulsions first twenty-four hours.

Headache. Slight at first, gradually increased to unbearable degree.

X-Rays. Fracture involving left lamboid suture.

Operation. Wesley Long Hospital, August 25, 1917. Craniotomy seven days after trauma; removed bone 1½ by 2½ inches just above the lateral sinus. Found extra dural clot 2 inches in diameter by ¼ inch thick beneath fracture.

Result. Prompt recovery, union by first intention. Headache and coma disappeared at once.

I. Fracture at base of skull; rupture of left lateral sinus; trephined; recovery.

GUTTER FRACTURES

In gutter or tangential injuries, the inner plate is always fractured, usually there are spiculae of bone piercing and lacerating the brain, with intracranial hemorrhage. This type of trauma carries a high mortality. Mueller says that even with primary operation the mortality is 22.7 per cent.

Depressed fractures from direct localized blows as from shell or shrapnel are characterized by a high degree of concussion, fragmentation of the bone, laceration of brain tissue by bone or foreign bodies being driven into it, hemorrhage, etc. War injuries of this class correspond to those we are accustomed to see from automobile accidents, falls upon the head, blows from clubs, brick bats, beer bottles, hammers and implements of various kinds. The following case is illustrative:

COMPOUND COMMINUTED FRACTURE OF SKULL

Patient. C. Childers, North Wilkesboro, N. C., age 48.

Trauma. While partially intoxicated was struck on right side of head with quart bottle, July 8, 1911.

Symptoms. Shock, concussion, semi-coma, slow pulse and disturbed respiration.

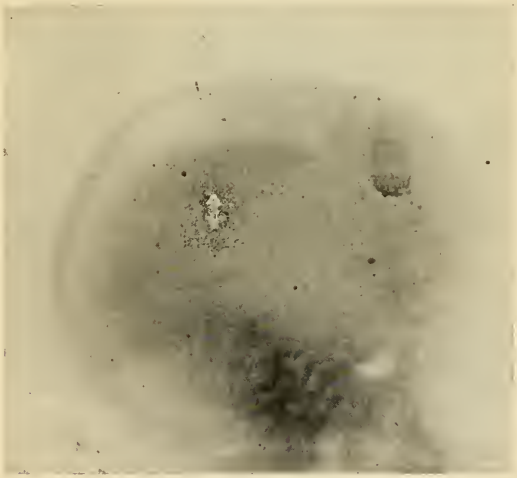
Transportation. Was moved 100 miles to St. Leo's Hospital.

Examination. On entering hospital shock and concussion were less. Patient still semi-comatose. Had urinary retention. Left leg and arm completely paralyzed. Right side normal.

Head. On the right side of head there was a lacerated wound of scalp and a large comminuted fracture of skull with numerous pieces of bone driven into the brain.

Operation. Craniotomy July 12, 1911, four days after injury. Semi-circular scalp incision, depressed bone elevated, edges rongeured. Large extra- and intra-dural clots were found. Rubber tissue drainage.

Results. Wound healed by first intention throughout. Paralysis of leg and arm disappeared within a few days. No untoward sequelæ.



II. Fracture of skull, perforation of brain two inches with pick; abscess; trephined; recovery.

In the prevailing style of "over-the-top" fighting many punctured wounds of the brain are necessarily made. The following case is a good illustration of a punctured wound of the brain:

FRACTURE OF SKULL—CEREBRAL ABSCESS

(See X-Ray II)

Patient. John Goode, convict, age 22.

Trauma. Patient struck on head with sharp-pointed pick, March 26, 1916.

Symptoms. Semi-coma, headache, sepsis, no paralysis nor convulsion.

Wound. One inch in diameter, situated behind center and to right of midline, infected and ragged. Wound in brain 2½ inches deep filled with pieces of bone, wool, debris, and pus.

Operation. April 3, 1916, eight days after injury. Wound cleansed, scalp edges trimmed. Brain wound cleaned out. Tube drainage.

Results. Uneventful recovery. Wound healed by granulation. No untoward sequelæ.

Penetrating wounds of the brain by the modern arm rifle are destructive to a supreme degree. Bergman's experiments show that at fifty yards the bone and scalp are literally torn to pieces and the brain disorganized. At a distance of one mile the bullet penetrates through and through and not until the distance is over 1½ miles does the bullet fail

III. Bullet retained in brain; no operation; recovery.

to emerge after having entered the skull. However, the effects of bullets are modified by circumstances.

I have records of a number of patients with bullets and bone lodged in the brain. Indeed, in some the missiles have been retained for long periods.

BULLET RETAINED IN BRAIN

(See X-Ray III)

Patient. Taft Phillips, Denim, N. C., age 5.

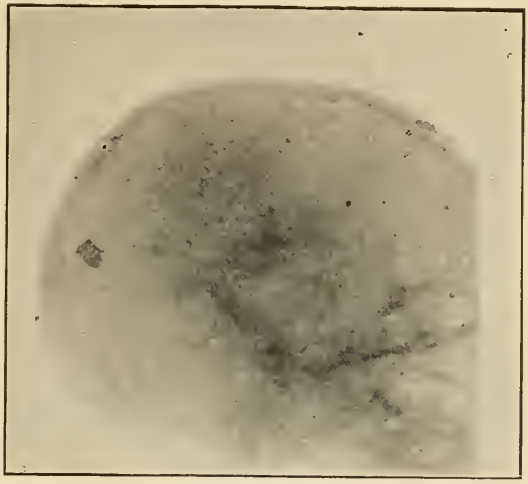
Trauma. Pistol bullet entered forehead above left eyebrow, October 8, 1914.

Symptoms. Profound shock, concussion, irregular respiration, slow pulse. Patient came near dying while picture was being taken. No paralysis developed.

Treatment. After removal to hospital symptoms improved rather rapidly. No operation done.

X-Rays. Show bullet lodged in posterior portion of brain.

Result. Prompt recovery. No untoward sequelæ.



IV. Bullet in cerebellum, paralysis of arm and leg; operation; bullet not removed; recovery.

PISTOL SHOT WOUND OF BRAIN—BULLET RETAINED

(See X-Ray IV)

Patient. H. Caviness, Carthage, N. C., age 6.

Trauma. Accidentally shot just above mid-forehead.

V. Freeman. Gunshot wound of brain; paralysis of left leg; convulsions; operation; complete recovery.

Symptoms. Shock, concussion, coma, P. 80, R. 34. Six hours later shock and coma less. Paralysis of left leg and left arm.

X-Rays. Show bullet in posterior fossa of the brain.

Operation. Wesley Long Hospital, August 20, 1917, eight hours after injury. Semi-circular incision and trephined near wound.

Rongeured from trephine opening into wound.

Removed depressed pieces of bone, including an inch of the longitudinal sinus groove.

Cleansed and drained wound with tube.

Results. Operation wound healed by first intention.

Pistol wound quickly healed by granulation.

Paralysis of arm better next day; disappeared by third day.

Paralysis of leg better second day; disappeared by the fifth day.

VI. Freeman. Antero-posterior view; bullet not removed.

GUNSHOT WOUND OF BRAIN—LATE OPERATION—BULLET RETAINED

(See X-Rays V-VI)

Patient. Gooley Freeman, Greensboro, N. C., age 30.

Trauma. Wife shot patient through head with pistol.

Symptoms. Coma. Semi-coma, which increased to general coma.

Paralysis. Complete paralysis entire left leg.

Wound. Left parietal, close to midline and toward front; wound infected and much depressed bone.

Convulsions. Frequent convulsions developed on seventh day and continued.

X-Rays. Show bullet lodged in posterior portion right lobe of cerebrum.

Operation. September 4, 1915, eighth day, soon as patient was seen and examined. Trephined on right over left leg centre.

Removed comminuted bone and cleansed wound.

Drain; no attempt made to remove bullet.

Result. Operation wound healed by granulation. Convulsions and coma quickly disappeared. Paralysis gradually and completely disappeared.

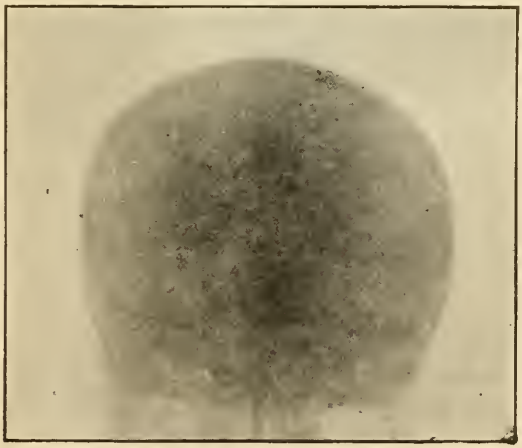
An interesting question in connection with retained missiles in the brain is whether or not they remain stationary. In the next case the bullet has remained *in situ* for three years:

RETAINED BULLET IN BRAIN

(See X-Rays VII-VIII-IX)

Patient. Thomas Wakefield, Greensboro, N. C., age 12.
Trauma. Gunshot wound of head.

VII. Wakefield. Bullet retained in centre of brain for three years; no operation; no sequelæ.



VIII. Wakefield. Antero-posterior view

Symptoms. Patient fell but recovered consciousness in a very short while. No paralysis.

X-Rays. Show part of split bullet under scalp; remainder in centre of brain.

Treatment. Wound dressed; patient kept under observation. No operation.

Result. Patient recovered promptly.

Three years later. No neuroses have developed. X-Rays show bullet in same position in 1914-1917.

The results of brain trauma are emphatic and worthy of our consideration.

IX. Wakefield. Side view. Picture, made by superimposing a plate taken in 1917 upon one made in 1914, shows the bullet in practically the same position. The slight difference can be explained by the different angles at which the plates were taken.

RESULTS OF BRAIN TRAUMA

Death, immediate or within a few hours.
Shock, concussion and compression.
Increased intracranial pressure due to:
  Shock.
  Hemorrhage.
  Edema.
  Infection.
Infection due to:
  Meningitis.
  Ependymitis.
  Cerebritis.
Cerebral hernia or fungus.

Death. This is where the grim reaper collects his greatest toll and robs both surgeon and patient of a chance. According to Fischer's statistics from the German Army during the Franco-Prussian War, "45

percent of 8,132 gunshot injuries resulted in immediate death, and nearly one-half of those found dead on the field of battle had wounds of the skull."

With shock, concussion and compression we are all familiar.

Increased intracranial pressure is not so well understood. It is one of the three great destructive forces in brain traumas. It is due to several factors: (a) shock, by which is meant a general disturbance of the brain; (b) hemorrhage, which, if not sufficient to destroy life at once, increases the pressure until the vital centers are disturbed; (c) edema, which always develops and greatly augments intracranial pressure.

There are many evil results of brain trauma, but the greatest of these is infection. It is the synonym of destruction, the destroyer of life itself. All war wounds are infected. The French speak of the first six hours as the period of "contamination," after that "infection." Infection takes three definite forms, each shading into the other. Strange as it may seem, meningitis *per se* is not so common nor fatal a complication of brain trauma as is generally supposed. If the type of infection and the condition of the wound allow adhesions to form between the dura and subdural tissues, meningitis spreading from the wound or the so-called vertical meningitis is rather rare. If, however, the infection is of the streptococcic type, adhesions do not form and fatal meningitis almost always develops. Should infection invade the ventricles all authorities agree that the resulting ependymitis practically dooms the patient.

The most common form of infection is a more or less general inflammation of the brain substance itself. Infection greatly augments intracranial pressure, which in turn is the chief factor in the development of cerebral hernia.

Protrusion of the normal brain does not occur even though the dura be incised. In trauma the brain substance is forced through the skull opening until the equilibrium of intracranial pressure is restored. While the largest head clinic in this country never had a cerebral hernia, greatly to its credit, it is one of the most common results of military brain traumas. Out of 610 head cases invalided back to England, 120 had cerebral hernia.

A cerebral hernia usually becomes profoundly infected, develops ulcers, granulation tissue, exudes foul discharges and often leaks ventricular fluid. Under these circumstances it is called cerebral fungus. Cerebral fungus kicks back, as it were; it increases the intracranial pressure, which in turn causes more brain substance to extrude. Often it becomes strangulated and pulsation in the herniated part ceases. (See Photo X.)

CEREBRAL ABSCESS—BRAIN FUNGUS

(See X-Ray XI and Photo XII)

Patient. M. Mooney, cotton mill operative, age 13.

Trauma. March 10, 1913, patient struck right side of head, just above ear, against spinning frame. No scalp wound.

X. Cerebral hernia. One of Sir Rutherford Morison's cases cured by "bipp." The picture was taken from the *British Journal of Surgery.*

XI. Mooney. Cerebral abscess followed by cerebral hernia; abscess perforated skull; trephined; recovery.

Symptoms. Continued at work, only slight pain. After three or four days developed much pain, fever, edema of soft parts and sepsis.

Operation. Saw patient April 17, 1913. Incision and drainage of zygomatic region. Considerable pus.

Result. Marked improvement.

Note. On May 19, 1913, patient returned to Hospital: condition serious. made free incision temporal region. Found pus oozing through pencil-sized perforation in skull. Trephined. Removed abscess size of guinea egg with well-formed sac.

Complications. Sepsis gradually subsided. Cerebral hernia (fungus) developed, discharging much serum.

Results. After trimming off hernia several times and treating parts antiseptically patient made a slow but perfect recovery.

Remarks. Evidently linear fracture, cerebral hemorrhage, infection through blood stream, perforation through skull, cerebral hernia.

XII. Mooney. Photograph after recovery from cerebral hernia.

I shall not go into detail regarding infectious agents, but simply remind you that the fields of Flanders have been under intensive cultivation for centuries, and the soil is impregnated with not only the ordinary pus-forming cocci, but with gas and tetanus bacilli. For this reason a wound of the brain, indeed of any part of the body, is a more serious matter in Flanders than it would ordinarily be in America.

TREATMENT OF BRAIN TRAUMAS

Primary cleansing of the wound.
Removal to hospital for operation.
Taking of X-Ray pictures.

Excision of scalp and bone wounds.
Discriminating removal of foreign bodies.
Covering of the exposed brain.
Complete or partial closure of the wound.
Only superficial drains, except in abscess.
Lumbar puncture, repeated as indicated.
Prolonged rest in bed.

This rapid survey of conditions found in brain trauma leads irresistibly to the conviction that the three great things with which the brain surgeon has to contend are: first, increased intracranial pressure; second, infection; and third, cerebral hernia. Almost every other consideration is subordinate to these.

Bowlby and Wallace sum up the treatment of brain traumas quite forcefully. They say there are two reasons for head cases doing badly: first, want of a good operation; second, early evacuation of cases well operated upon. It seems that head cases stand transportation very poorly after they are operated upon. Therefore, it is far better to transport the head cases at once to the hospital, whether near or far, where the patient can remain for a long period. It has been found, in fact, that patients who were transported to the base hospital did much better than those operated upon close to the firing line under unfavorable environment. Neither a slow pulse nor depressed fragments of bone constitute an indication for immediate operation. The slow pulse rather suggests that an operation is worth while. The depressed fragments as well as missiles had better be removed in a thoroughly equipped operating room by a skillful surgeon. And yet brain traumas should be operated upon at the earliest moment, day or night, that they can be gotten into a favorable environment.

Highly specialized surgery calls for specially qualified surgeons. Captain Bagley says: "We are confronted with the fact that there are very few neurological surgeons." Surgically speaking, "The field is ripe unto the harvest, but the laborers are few."

To overcome this, the Surgeon-General has provided for intensive training of a large number of general surgeons who already possess ample experience and excellent judgment and are willing to undertake the special work to fit themselves for doing brain surgery.

WAR SURGERY

Col. W. O. Owen, M.C., U. S. A., Washington, D. C.

I trusted our good friend, Dr. Long, and I am ruined, for if there is one thing in this wide, wide world that I really cannot tell a group of medical men, such as you are, it is war surgery. The only difference between war surgery and civil surgery is the difference of environment. War surgery is the application of the principles of surgery to the environment of war. The present-war surgery has not yet been written; it is being written now. There is a large group of men, high class men, in Europe, studying this now, as hard as they can; even trench foot, although now very generally recognized as neither more nor less than frostbite, had to be carefully studied before this was realized; trench fever is entirely a new disease and growing out of trench life, the outgrowth of war conditions. We are studying war surgery from its every angle, including the use of the Carrel-Dakin method, Sir Almoth Wright's method, and the Dichloramin-T method, Criles method on the causation of shock, and an endeavor to collect and study the pathological material is being made, both for present value and future study.

What I really thought that I was going to do when I came here was to get on my feet and say to you gentlemen, "Here are some moving pictures that are self-explanatory. I am glad to meet you. Operator, pull the string and let the pictures appear." Yet Dr. Long has advertised me as making a speech on war surgery, and then, when I have prepared this and was ready with war surgery, along comes Dr. Rankin through my friend Kinyoun and demands of me that I shall talk to you about venereal diseases in the armies of the United States, and that I shall show you a film that we are using in the army to combat these diseases, called "Fit to Fight," and this film takes up an hour. I wanted to show the Carrel-Dakin method or Dichloramin-T, and they will take up an hour. I was quite anxious to show you "The Way Out" which shows how various cripples in civil life with calm, steady courage and intelligent self-direction, may carry their own weight in the economic world and have a little to spare. This will take an hour. As one of this group of pictures weighs about seven or eight pounds, and I have to carry them, I can only say, I am completely at a loss to know what to do. So, I have brought "Fit to Fight" and one other group of pictures which I thought might interest you.

I, in common with all other men who are not accustomed to public speaking, shy away from it when it is possible to do so. I truly desire to talk to you in relation to the training of the army medical man, as I

understand it, and to stimulate your interest to that degree that you will be willing to make the sacrifice which all patriotic citizens will be compelled to make for the civilization of this great Nation of ours. For, whether we are willing or not, brethren, we are in this war for a Fight to the Finish. No single man of us would willingly live with the yoke of "Kultur" around his neck; each of us too well loves his wife and his children to willingly bend his neck to this yoke; and, say what we please, think that which we choose, for generations the German has believed that the only real way for the Germanic people to advance along their chosen line of development is through the deliberate practice of preying upon other peoples. This practice has led them to the teachings of Neitsche and von Bernhardi and others who preach the great value of war for the cultivation and expansion of a nation and of its value as an educational influence. This is most beautifully shown in the Treaty of Verona, wherein the Emperors of Prussia, Austria, Russia and France, deliberately entered into a compact to control the use of the publicity of the newspaper, the faith and love of the churchmen and the powers of the army, the first to spread the progaranda desired and the news that it wished to fasten upon the minds of the people; the second, to teaching them the great value of humility and yielding to the moral law; and the last, to help them conquer other peoples, whose resistance had been weakened by the propaganda indulged in by the first and the nonresistance indulged in by the second.

Great Britain has found it quite necessary in order that the hospitals may carry the peak of the load, to provide 25 per cent beds of the total numbers in their armies. Now, it is proposed that we shall have an army of 2,000,000 men, ten beds per nurse is about all one nurse can care for. For an army of 2,000,000 this means 500,000 beds and 50,000 nurses.

General Gorgas testified in 1916 that he would require in case of war at least 1 per cent of the total army as medical officers. The Secretary of War has allowed that the medical department should have 10 per cent hospital corps men. This, you will notice, makes a personnel of 20,000 medical men, 50,000 nurses and 200,000 enlisted men. This is a total of 270,000 medical personnel, and yet not one single patient. Shall we calculate on less than a total of 10 per cent of the original force as being on the sick report at the end of the first year, when we have to calculate the peak of the load at 25 per cent? If we calculate at 10 per cent this is 200,000 sick men to be cared for or a total that the medical department chief is responsible for of 470,000 individuals—rather a large command for even a Major General of the medical department.

The peak of the load comes in points here and there along the line and not all the way; hence the necessity for 25 per cent.

As you are aware, the medical man has borne his part in the war as any good patriotic citizen would do, and he has borne it uncomplainingly.

There have been secretaries of war and many generals of the line of the army from our ranks. The day has begun to dawn when the line of the army looks to the medical man when he joins the army, not to be a mere painstaking, thoughtful nurse for the sick, but as a soldier as well. In this day, to make a correct diagnosis, to get correct medical and surgical treatment, is a matter of course. The expert surgeon is not put to caring for typhoid fever, and the expert internist, to doing surgical work. Either of them will do it, and do it fairly well—and is expected to do it, in the absence of all others who are not more especially trained than this individual happens to be. In this day and generation, there is a new thing for the medical man to learn, for his first duty when he joins the service is to learn to become a good soldier first of all. Hence it is, that the Surgeon General has found it necessary to take these highly trained medical men and assign them to their special camps, not to study medicine, nor to study surgery, but for the study of the application of the principles of these to the environment of war. War does not change the principles of medicine, nor yet of surgery; but it is a very different thing to make your preparations for an aseptic operation where everything around you is septic and where you must render everything clean, surgically, as far as it is possible. These things are taught in the Medical Officers' Training Camps, as are also the methods of handling the units which compose the Medical Department force, for it must not be forgotten by you gentlemen who come to join us, that more than eleven per cent—and nearly twelve per cent—of the entire forces of the United States is composed of the medical personnel.

It is rather an intricate problem, when you remember that when you become, if any of you should happen to do so, the chief surgeon of a division of infantry, that you will have under your command a personnel of nearly a thousand men, with which to care for the sick of your division; that you are expected to keep in touch with the entire situation as the fight is being fought. The going into the fight with the troops is easy enough; all you have to do then is to keep your place and this would not require any special training, but, when the fight is on, and you must keep in touch with the Division Commander and superintend the removal of the wounded, with the hundred and odd wagons which form this unit, and with this thousand men. Please remember, that you have to pack these men over, from the battle front, and that you have to get them

back behind the lines; and if you have been trained so that you are thoroughly familiar with your own place and with the other fellow's place, and you know when you have the right of way and when the other fellow has it—unless you know all of this, it will mean confusion worse confounded. They will catch you by the "scuff of the neck" and throw you into the waste heap—and I wish to say to you, that, as an army man, that he who, on the battle front gets into the way and knocks first into the one and then into the other, that the waste heap is the only place in which he belongs.

In this connection, it may interest you to know that in a speech in the Chamber of Deputies of France, one of the deputies made the statement that in the French army, the medical officers had suffered in proportion to their numbers a death and wounded loss only exceeded by that of the infantry of the line of the army. In the British Medical Service, I have understood that there were four classes of officers whose percentage mortality vied for first place, first one end then the other leading. These four were infantry, field artillery, aviation and medical officers. I have a list of the names of over 300 medical officers of the British service, who lost their lives in action and 348 who died of disease since this war began. I have a list of 1,303 medical officers who have been wounded in this war since it started. When you bear in mind that the total number of British medical officers does not exceed 12,000, you can readily see that this is quite a heavy loss. Over 700 dead and over 1,300 wounded—and this was some time ago. The reason the British Medical Service does not have more medical officers is simply because they are not to be had in the British Empire. There is an organization of the medical profession in Gerat Britain known as "the War Emergency Committee," who select the medical men who are to go to service, and this committee has reported to the war department of Great Britain that it is impossible—without causing serious suffering to the civil population—to select more medical practitioners from the civil population. I have not yet been able to collect the corresponding data for the enlisted personnel which goes with these mortality and morbidity statistics of the medical officers in this war, but I think that it is fair to assume that when their history has been written, as I hope it will be, it will show that they have been willing to pay the sacrifice, and that their percentage of mortality will not be found at the bottom of the list, although the others are rated as the combatant force, and, by the terms of the Geneva Convention, we are rated as noncombatants, and therefore have been held as being unworthy to receive the promotion that has been given ungrudgingly to our brothers of the line—the so-called combatant forces, to distinguish them from us, who go with them into battle and

bring them out of the crush of the battle, when they have been hurt and are unfit to go further along with their brethren.

In my humble judgment, the day is dawning when our brethren who have to go to the forefront of battle and have to take their part in the fighting line shall no longer be stigmatized as noncombatants. They have gone to battle; they have paid the price in death and wounds. It is unjust; it is unfair; it leads to inefficiency, when men are held down and refused a proper grading because, forsooth, they are held to be and are said to be noncombatants. It prevents them from taking their proper places in the war councils of the world, because they are improperly graded and grade in war councils is the thing that controls. No matter what the brain, if its grade—as represented in the uniform worn by the man—be low, he will not get into the war council. When his brain has been recognized as a big, strong, active brain, the grade is put on his shoulder.

I cannot talk along these matters with either wisdom or patience—my feelings are too tense—but I could not resist giving you this, so that you may know and appreciate the "why and the wherefore" of the necessity of training the soldier before he goes to the front to take his place as a medical officer in the armies of the world.

We need you, my brethren, as medical men in the service. It is true that we have many thousands of your number on our list, but before you can join us and be of real service to us, it will necessitate your going through the Medical Officers' Training Camp, in order that you may learn all the duties and the obligations of the soldier to those above him, to himself, and to those below him, because the medical officer has these three important things to learn, and he can best and more quickly learn them in a training camp. I shall never, so long as I live, forget the pain of my training. It cost me many, many an anxious moment and many a painful day. These training camps assist largely in removing these and give much better and quicker ultimate results.

GYNECOLOGY

BILATERAL PYELITIS—REPORT OF A CASE

Robert L. Felts, M.D., Durham

The following case of bilateral pyelitis is reported because of one or two rather interesting features connected with it:

Mrs. J. M. A. Aged 34, married, four children. Family history, negative; past history, no illness of any consequence up to the present time, no diseases peculiar to her sex. Youngest child was born about five months ago, no complications either during pregnancy or of the puerperium. Present illness began about June 10, 1917, when she began to have furuncles on both lower extremities. No importance attached to them by her and they received only the usual home remedies. About July 10, 1917, I was called to see her because of chilly sensations she was having each day, with a slight cough and a gradual loss of strength.

Physical examination. Skin and mucous membranes pale, flabby muscles, apparently there has been a recent loss of weight. Tongue heavily coated. Heart and lungs normal, except an occasional dry rale at apex of left lung posteriorly. Normal liver dullness, spleen not palpable, some tenderness and slight rigidity over left kidney region. No tenderness or gurgling in any other part of the abdomen. Three or four purplish scars on both thighs and from one or two of these a drop or two of pus is discharging. Patient's temperature, 102 3-5; pulse, 100. Blood examination a few days later shows 80 per cent hemoglobin, and leucocyte count, 14,320; red cells, 4,130,000; Widal partially positive; subsequent Widal, made a few days later, was negative. No plasmodium found.

Urinalysis. Sp. gr., 1012; acid; albumin, light cloud; no sugar, leucocytes in number, no red cells, a few casts, no acetone. Stain for T. B., none found. Von Pirquet, negative.

Patient was observed at her home for a few days and then removed to Watts Hospital for further study. She continued to run an afternoon rise of temperature from 101 2-5 to 103, with a morning remission, and generally a normal temperature in the morning. The urinary findings remained practically the same. First functional test done, showed a total of 27 per cent. X-Ray of both kidneys showed no calculi.

The following is the report of the cystoscopic examination made by Dr. C. O. Abernethy a few days after her entrance in the hospital:

Bladder, low grade cystitis. Right ureter, easily seen and catheterized, free flow, flowed as if sack of pyo or hydronephrosis had been tapped; few pus cells; appeared in 12 minutes; amount in one hour, 7 per cent. Left ureter, hard to find, easily catheterized, flow slow, no pus; appeared in 12 minutes; amount in one hour, 5 per cent. Bladder function from leakage more from the left, probably 13 per cent; total 25 per cent.

A culture was made from the pus obtained, which showed a pure culture of staphylococcus aureus. An autogenous vaccine containing 300,000 to a cc. was made, the use of which will be noted later.

Patient remained in hospital until October 3, having received general supporting treatment. Bladder was irrigated for a short while with 2 per cent boric acid solution. Principal drug treatment was urotropin, having alternated for a few days with alkalis. The last week of her stay in hospital she was given two hypodermics of the autogenous vaccine, ¼ cc. each at four-day intervals, both being followed by slight reaction. These injections were continued at intervals of five days for six weeks after her return home.

Upon leaving the hospital she was free from pain or tenderness, the urine still showed a faint trace of albumin, few leucocytes, no casts, functional total 43 per cent. She was still having a slight afternoon rise of temperature, but this disappeared after the fourth or fifth injection of the vaccine.

It is now five months since she returned home. She states that she feels perfectly well, has her usual weight, good appetite, just a little more easily fatigued than she formerly was.

The points I wish to summarize: First, the etiology from furunculosis five weeks previous to acute symptoms of pyelitis, and the organism responsible staphylococcus aureus; second, the bilateral occurrence of the disease.

OBSTETRICS

THE FREQUENCY OF RETROFLEXION OF THE UTERUS FOLLOWING LABOR: ITS CAUSATION, PREVENTION, TREATMENT.

John G. Blount, M.D., Washington

Though the delicately poised uterus is usually spoken of as occupying a position coincident with the axis of the superior pelvic strait, it must continually be borne in mind that, in reality its position is influenced by the neighboring organs. A full bladder pushes the fundus backward and a full rectum shoves the cervix forward. The bladder is connected with the uterus by the vesico-uterine ligaments, while the rectouterine ligaments pass backward to the second sacral vertebra. Whatever doubt may exist in the minds of the profession as to the part these ligaments play, Tuscha was so impressed that these little folds maintained the uterus in a state of normal anteversion that he called them retractores uteri.

Reviewing briefly its supporting structures. We note that the uterus is pushed up between the layers of peritoneum, the two layers of which meeting at the lateral surfaces of the uterus and spreading out to the ilia of its respective sides forming the broad ligaments.

The superficial layer of muscular fibres from its posterior aspect, converge to form the ovarian ligament. From the anterior surface of the uterus a similar bundle of fibres form the round ligament, passing through the inguinal canal to the symphisis pubis where its fibres terminate in the connective tissue of the mons veneris.

I shall not here attempt a discussion as to why the uterus remains in its normal position, but from the delicacy of the structures concerned in its support, one can readily see that anything interfering with their tone or tension will render the uterus liable to retroflexion.

If one will systematically examine his female patients, both those complaining of pelvic symptoms and those not complaining of pelvic symptoms, he will be forced to the conclusion that retroflexion is by far the most frequent of all the other interior displacements, and much more frequent in parous than in nulliparous women.

Naturally the uterus is dependent upon its supports for the integrity of its position, and those supports are classed in the order of their importance:

The pelvic floor, the pelvic organs, the retentive power of the abdominal cavity, and last, its ligaments.

Any condition therefore impairing, weakening or destroying these supports impairs its safety and acts as a cause of displacement.

And now as to causation: Dr. Crossen in his recent text-book summarizes the causes of retro-displacement of the uterus following labor as follows:

1. Injury to the pelvic floor and accompanying relaxation of other supporting structures.

(a) Pelvic floor unrepaired, over stretching, or subsequent involution;

(b) Sacrouterine ligaments, over stretching, or subinvolution;

(c) Broad ligaments, round ligaments and other pelvic tissues, over stretching or subinvolution;

(d) Vaginal wall, over stretching, or subinvolution producing subsequent dragging on cervix.

2. Subinvolution of uterus following labor or miscarriage:

(a) Of corpus, due to infection or placental remains, or blood clots retained, or to atomic condition of uterus from other causes (anemia, poor pelvic circulation);

(b) Of cervix, due to laceration with infection of cervical tissue, or to persistent relaxation or atomic condition from other causes.

3. Scars in upper part of vagina, drawing cervix forward.

4. Getting up too soon after labor or at work too soon (displacement is favored by the heavy uterus and the relaxed vaginal wall and pelvic floor).

5. Constant dorsal position after labor or miscarriage.

In glancing over the summary of Dr. Crossen it is readily seen that the traumatisms of labor are responsible for each factor singly and collectively in causing the posterior displacement. Every practitioner practicing the obstetric art, unless he keeps constantly in mind the causative factor entering into the production of every retrodisplacement is a derelict on the tide of time, damaging and crippling womanhood to his eternal shame and disgrace, and ultimately entailing the loss of his entire obstetric clientele. All obstetricans should bear constantly in mind the irreparable damage every woman sustains when laceration of her perineum takes place, and its repair should be accomplished at once and conscientiously watched to see that its repair is perfect, and if not, a secondary operation should be performed by a competent man.

In his mind's eye he should see that when the perineum is lacerated, defecation immediately becomes difficult, due to the fact that the levator ani assists in dilating the sphincter and directing the feces toward the anal opening. When therefore the pelvic floor is lacerated or torn the opposing forces of the levator ani are absent and the fecal matter is drawn by the abdominal pressure against the posterior wall of the

vagina before passing through the anal opening and the bulging of the posterior vaginal wall destroys the support of the anterior vaginal wall, which in time also becomes prolapsed.

Therefore

> The levator and its owner's pride,
> When once destroyed,
> Can never be supplied

unless its repair is immediate and the result perfect. In a study of these cases one should constantly keep in mind the tendency to constipation, due to the blunting of the rectal reflexes, and this in itself is one of the most prolific causes of retrodisplacement.

When these conditions are met with in a woman with a broad, roomy pelvis, the watchful obstetrician will inaugurate measures intended to safeguard the woman and prevent this condition. At once those patients should be instructed and measures taken to prevent their bladders from remaining in a constant state of distention, thereby pushing the fundus of the uterus back toward the sacrum.

So, too, they should be instructed and measures inaugurated to prevent large fecal accumulation, because the mechanical pressure will keep the uterosacral ligaments taut.

If in these cases there has existed a septic or specific infection of the endometrium, or a laceration of the cervix, or large blood clots retained, we will find upon examination a large subinvoluted uterus, which is by far one of the most common causes of retrodisplacement. Subinvolution is the greatest menace to the delicate ligaments supporting the uterus.

The most impelling force maintaining and supporting the uterus and the one least understood is the retentive power of the abdominal cavity, and no force so strengthens and insures this as free normal respiratory movements, as in normal inspiration and expiration the up and down movement of the uterus tones up the uterine ligaments and improves the pelvic circulation.

The tight corset therefore should only be mentioned to be condemned, and the abominable abdominal bandage should receive its full measure of condemnation. The faulty dorsal recumbent position should always be condemned because the heavy uterus with its hypertrophied and elongated ligaments fall backward of its own weight and the patient leaves the lying in period a helpless cripple. So also should these patients be taught that jumping from a height with a full bladder and rectum will most assuredly precipitate trouble, and standing for long hours or sitting at a table with body bent forward are only a few of the dont's that these women should bear constantly in mind.

Likewise every woman should be taught that in standing, when in the erect position, the line of gravity falls at the symphysis pubes, whereas in a stooping posture it strikes about the plane of the pelvic inlet, consequently the full weight of the abdominal contents presses against the organs of the pelvis.

And now a word as to prevention:

The ounce of prevention in these cases is worth many times the proverbial pound of cure. The early repair of cervical and perineal lacerations; the early recognition of a septic endometritis and an early curettage for its relief; the avoidance of the constant dorsal position, the patient being instructed to lie on the side or abdomen, or as the fundus of the uterus nears the brim to lie in "the exaggerated lateroprone position with elevation of hips on pillows." (Cherry.) Too early rising should not be allowed, the exact time suitable varies with the patient; it should be determined by examination of the position of the uterus, and the fundus should be below the pelvic brim.

That postural treatment is helpful in the prevention of this condition is evidenced by the unanimous advice of men of mark in the obstetric world advising these patients to assume the knee chest position several times a day until involution is complete and the uterus in its normal position.

Beck recommends the "kangaroo walk," walking on all fours with the palms of the hands on the floor and the knees held as stiffly as possible. This is to be practiced each day as soon as the patient is allowed out of bed, increasing the distance gradually. It should be continued for a month or more.

Treatment.—The *sine qua non* is the removal of the cause. Tears in the perineum, pelvic floor and cervix must be repaired, cervical lesions treated, and if an endometritis is present, the uterine cavity must be curetted. After the removal of the cause, the replacement of the uterus must be effected either by the bimanual method or this method combined with the knee chest position.

Where retroflexion is accompanied by acute inflammation the inflammatory condition should be treated first, before any attempt is made at replacement of the uterus.

When retrodisplacement occurs early in the puerperium before involution is complete, manual replacement, frequent assumption of the knee chest position and the use of vaginal tampons is usually sufficient to correct the condition.

If the displacement occurs later, but without complications or adhesions, and the uterus is freely movable, it may be replaced in the dorsal or knee chest position, and if there are no adhesions the pessary is

sometimes justifiable, and after a few weeks it may be removed and the uterus having returned to its normal size will remain in its normal position. If in several months the pessary has not maintained the uterus in its normal position then it has failed in its purpose and an operation must be resorted to.

When there is only slight adhesions, glycerine tampons and manual manipulation may break them up and permit manual replacement. Dr. Jacoby recommends, "gentle manipulation by the fingers in the fornix." "Very much," he says, "can be accomplished by this daily massaging of the fornix, in the stretching of old adhesions, thus allowing the uterus to be subsequently returned to its normal position."

I have treated the subject largely from the viewpoint of the general practitioner or the obstetrician.

The morbidity of his patients should count more than his mortality, and an awakened and an enlightened public opinion will call him blessed. If he has failed in his duty to his patients a none too considerate surgeon will make known to them his imperfections.

If I have caused one member of this meeting to refuse to relax in the care of womanhood, our best friend, the doctor's best asset, then I shall not feel that this short paper has been in vain. I have not dealt with the subject from an operative point of view, as this paper was only intended to include those cases of retrodisplacement following labor.

Every case of chronic retrodisplacement is operative. But since the surgical section is meeting in another hall, I will be bold enough to say that no entirely satisfactory operation for retrodisplacement has been found, as is evidenced by the numerous measures for its relief.

THE MIDWIFE PROBLEM

G. H. Macon, M.D., Warrenton

All physicians with country practice have to contend with the ignorant and superstitious midwife.

I was called not long ago to see a patient that had just been delivered by one of these women. When I arrived this old midwife was the first to meet me and take me aside for a little private talk. She said the patient had a little rush of blood to the head; it made her dizzy and fainty-fied (as she termed it), but insisted the patient was all right and resting quietly then. I agreed with her, but if I had not been prompt she would have continued quiet until judgment day. I made an examination and found her pulse so fast I could not count it. The

pelvic examination disclosed a relaxed uterus, and the uterus contained about one-third of the placenta which was removed. This removed, the uterus was made to contract by large dose of ergot and external kneading of this organ, then packed tightly with iodoform gauze. I saw her several times and she made an excellent recovery. This illustrates one of the many cases where the patient would have died had she been left in the care of the midwife, for the trouble in this case was that she detached part of the placenta by pulling on the cord and left some of the placenta in the uterus.

Doctors who practice in the country have often heard these old women say that "Mrs. Smith" would not come around this month because the moon was not right.

I know a negro woman who is very intelligent, and I always get her to work with me when possible. I have instructed her thoroughly what to do in an emergency, when to send for me, etc. I know of several instances where she has worked alone in emergencies with intelligence and exactness. What she knew I had taught her. Once you have an intelligent and interested negro taught you have an excellent nurse. They not only look after the patient, but will attend to the house work.

I once asked an old woman what she did when her patient flooded, and if she ever gave ergot. Her reply was she would put cold cloths on her head and elevate it, but she didn't believe she had ever seen any ergot. The majority in the rural district use this old woman's treatment, and when the patient dies they console the family by telling them the baby came on the wrong time of the moon or the womb did not sit right.

The worst obstetrical cases that I have to attend, the dangers could have been avoided had not the ignorant midwife told the patient that the continual oozing of blood was natural and there was no need of consulting a physician. She would assure her that "Mrs. Brown" over the creek had suffered the same way, but came out all right. Now Mrs. Brown did not have a placenta previa, but this patient did. She died and the midwife was directly responsible.

The majority of these women never wait a reasonable time for the placenta to separate; they know nothing about how to make the uterus contract; they only know how to pull the cord, and in most cases the cord is broken or the placenta is gotten before it has fully separated, consequently we have retained placenta, hemorrhage, and puerperal infection.

The majority do not know how to give a douche; they do not know that the eliminative organs should be carefully watched in a pregnant woman. When they are engaged on a case and the patient suddenly

develops a toxic convulsion they will tell her relatives "she took back," as they express it, after some of her relatives, leaving the impression it was inherited. I find some of these women are very smart in covering up their mistakes, and in most cases get by with them very cleverly.

In regard to the baby, they never use antiseptics to sterilize their hands, although most of them through fear of prosecution, use silver nitrate as prescribed by law. I contend that they carry infection into the baby's eyes from their dirty hands. I believe a large number of cases of ophthalmia can be traced back to the midwife. In regard to the cord, most of the midwives do not change the cord dressing in four of five days, and instead of thoroughly cleansing the cord each day, they will not use water on it in six or seven days. Most of them seem amazed when I tell them that the cord dressing should be changed and the cord thoroughly washed each day. The majority do not seem to understand the meaning of cleanliness. They do not know what it is to instruct the patient the importance of keeping the nipples cleansed after each nursing, also the importance of regular intervals for nursing and the length of time the child should nurse. They believe in the child nursing until it goes to sleep at the breast.

We frequently find the unnecessary death of an infant due to the fact that the midwife will prescribe paregoric when the baby is restless from over-feeding or under-feeding until it is kept in a stupor, the digestive organs do not functionate properly, due to the stasis caused by the opiate, also the secreting glands are made inactive, hence digestion stops and the child soon dies.

On my last case was the most ignorant midwife I've ever encountered. This case was adherent placenta. The after treatment required sterile douches to be given at regular intervals. I instructed her the right proportions for these douches, taking for granted she knew where to insert the nozzle. She asked me if I wished the douche given in the rectum or the vagina. Through disgust, I told her to give it in the ear.

The remedy for the ignorant midwife is up to the doctors to solve. I think the physicians in every community or township where the midwife resides should select the most intelligent of these women and see that they are taught the proper care of the patient. The county physicians could require them to come to their office and receive the proper instructions, have the county board of health give them a license when they have finished their course, then it should be a misdemeanor for any other to practice midwifery.

I feel sure if we could adopt this plan it would help reduce the obstetrical mortality in the rural districts.

DISCUSSION

Dr. H. A. Royster, Raleigh: I am interested in this midwife problem, not from the point of view of the obstetrician, but on account of my official connection with the State Board of Medical Examiners. We have had various inquiries from physicians over the State, sometimes from very intelligent physicians, who want to know what the Board of Medical Examiners are going to do about the midwife. We have not one single thing to do with the midwife because she is exempt under the law.

The President and myself had some correspondence about this immediately after the Asheville meeting through my interest in a paper by Dr. Frizzelle, who, I see, was on the program for this section, but who is not present, I believe. I then began to make some effort at least to register these women and instruct them. They are required to carry out the provisions with regard to nitrate of silver under the Board of Health.

It strikes me this very simple plan presented by Dr. Macon may solve the problem, at least for the present. Is it not possible to do as he says—to have these midwives registered under the County Board of Health, composed of the county physician and two other physicians, the chairman of the board of county commissioners, the mayor of the principal town and the superintendent of schools? Why is it not possible to have these women registered under that board and then require the county physician to instruct them in their duties and see that they come up to a certain standard?

I should like to have some discussion upon this point and some enlightenment from some member of the Board of Health or some others, who know a good deal about the country obstetrical work to see whether it is feasible or not. If it is, I think we have a solution of the matter. The Board of Examiners cannot either register these women or interfere with them. One of the doctors in the eastern part of the State said if we do not do something to keep down the midwives the doctors would lose all the obstetrical practice. Then other men were telling me about the number of infections which had occurred and so on.

If it would be in order, then I would like to make a motion to the effect that a committee be appointed, of those interested in this particular work, to confer with the Secretary of the State Board of Health with the idea that if this plan, or something like it, seems feasible a law covering it be introduced in the Legislature through the Board of Health in its official capacity, setting out the conditions so that the plan might be carried out effectively.

Dr. E. J. Wood: I am not an obstetrician in any sense, but I get on my feet to ask a question for my colleagues in New Hanover. What about the osteopath who is doing obstetrical work?

Dr. J. E. S. Davidson, Charlotte: I rise to second the motion of Dr. Royster.

Dr. Cyrus Thompson, Jacksonville: I wrote a paper in 1906, I think, and read it at the meeting of this Society at Charlotte. I was chairman at that time of the section on Obstetrics. I wrote my paper, which some of you may recall, under the breezy caption of "When the Baby Comes." In that paper I discussed the whole midwife problem. I made some recommendations. I said substantially what has been said by Dr. Croom and others in years since, that the midwife problem was an unavoidable and, therefore, a necessary evil, but that dirty, dangerous midwifery was not an unavoidable or necessary evil. Even in times of peace in a country like the State of North Carolina, it would be impossible for every woman coming to her confinement to have a physician in attendance. She is compelled many times to rely upon the midwives. A very large percentage are compelled to rely upon the midwives. You take, for instance, my territory. I live 50 miles from Wilmington. If you look towards Wilmington the first physician that you come to is at Scotts Hill, 38 miles from me; if I look towards the sea, it is 25 miles to a man at Sneads Ferry; if I look westward toward Pender, it is 36 miles to Burgaw; Swansboro is 23 miles; Maysville is 26 miles, and Richlands is 15. Now, then, in a territory like that, you see how absolutely impossible it is for every woman who desires the services of a physician to have his services. The midwife is a necessity, an evil thing, an unavoidable and necessary evil; and that is why it is in the law that they may practice their calling. You never could have gotten a medical practice act if you had not recognized the necessity of them. While a great many aliens have been coming to this country, there are a great many natives coming also. These are not Huns when they come; they are honeys; they are somebody's darling when they come.

Something ought to be done; the midwives ought to be instructed, and the instruction is up to the physician in his community, the physician in the county. Dr. Macon, I congratulate you upon the wisdom of your course—that you attempt to instruct. You have had some success along that line, and I have had some success, but if we could do this thing systematically we could do a great deal more good, and what we have considered a necessary evil we would still have a necessity, but not have as evil as it is now.

Dr. J. W. Halford, Lillington: My experience coincides very largely with Dr. Thompson's, in that the midwife does most of the obstetrical work, and I heartily agree with him that the midwife is a necessary evil, if we wish to call it an evil, but that does not change Dr. Royster's suggestion at all. I think his suggestion is a very wise one. If we may by legislative enactment require all these women to register with the County Board of Health, and have some competent person in each county give a very few simple instructions, the fundamentals, that will result in saving hundreds of children that now go down to an early grave. I hope Dr. Royster's suggestion will be put into effect.

Acting upon the motion of Dr. H. A. Royster, the following committee was appointed: Dr. G. H. Macon, chairman; Dr. J. G. Blount, Dr. M. T. Frizzelle, Dr. Carroll Wiggins, Dr. Otho B. Ross.

ANESTHETICS IN OBSTETRICS

Otho B. Ross, M.D., Charlotte

Is there need of anesthetic agents in labor? Is there pain in labor? The first question is answered by the second. Where there is pain there is need for the relief of pain. I am reminded of the question the young single lawyer asked the doctor. "Why do they speak of the birth of a baby as labor?" Labor is a physiological act. There is undoubtedly much pain associated with the act. This is more so than with any other physiological function. This was not so marked with the primitive natural life of woman. But with living inside of houses and tight clothing this has become more marked. At the same time the highly nervous mechanism of the woman has become less able to endure pain.

The main factors in labor that make for pain are these: Uterine contraction, passage through pelvic canal and dilation of the cervix. These are undoubtedly painful procedures. It is to overcome these pains that we have read so much in the recent medical and lay press. It was for the relief of these pains that Queen Victiria knighted Simpson.

There is a tendency for the medical profession to become hardened to the suffering of pain, if we feel that it is necessary. That tendency is seen in the element that are unconcerned about the pains of the woman in labor. This, as many branches of obstetrical practice, needs careful investigation and revision. It is a terrible state of affairs to see from the mortality statistics that there has been no decrease of obstetrical mortality outside of hospitals in the last fifty years. This is

the more appalling when it is remembered that in these fifty years antiseptics and anesthetics have both been made practical. DeLee says that one out of every four hundred labor cases dies of puerperal sepsis, and that ten times that many suffer the sequlae of bad obstetrics. How many are willing to adopt the ideals of

1. Not partial antisepsis, but asepsis?
2. No meddlesome practices?
3. The substitution of rectal for vaginal examination?
4. Careful observations of the fetal heart?
5. Obliteration of the shock of labor by preventing the pain?
6. To consider every delivery as an operation calling for the finest technique?

The requisites of an anesthetic in labor should point us to the one of choice. We use the term "anesthetic" to include (1) the obliteration of sensation, i. e., anesthesia; (2) the forgetfulness of pain, i. e., amnesia; (3) the relief of pain, i. e., analgesia. The pains of labor differ in the three stages of labor. Those of the first stage are mild and nagging in character, usually easily borne by the patient, though they do prevent rest and sleep. The pains of the second stage are more severe and bearing down. The anesthetic for the first stage pains should be light and rest producing. That for the second stage should be powerful enough to give relief from the pains that cause the proverbial noisy delivery room and to prevent the shock of the pains on the nervous system of the patient. The pains of labor have the characteristics of being brief, one to two minutes in duration, and having an intermission of from three to fifteen minutes between. The anesthetic then, of choice, should possess two characteristics: First, it should be rapid in its action to stop the pain; second, it should be quickly recovered from, so as to allow freedom between the pains. These two characteristics would seem more desirable than the continuous action of an anesthetic, in that they fit the character of the pains. It is the prevention of pain that is desired more than the unconsciousness or lack of sensation or the forgetfulness of pain.

These, then, are the needs to be met in obliterating the pains of labor. What agents have we to meet these needs? What physiological action enables these agents to meet these needs? What is the technique of their employment?

The chemical agents that are used as anesthetics in labor are ether, chloroform, scopolamin, morphine, and nitrous oxide-oxygen.

Ether can be used either as an analgesic or anesthetic. Its use over a course of several hours has many objections. It produces nausea. It delays and diminishes the strength of the pain. It is liable to irritate

lung conditions, as tuberculosis. We all see old cases of tuberculosis that have been activated by ether. These conditions have practically limited ether to the terminal period of the second stage of labor.

Chloroform may likewise be used either as an analgesic or anesthetic. Being not so irritating and nauseating, it can be used over a longer period of time than ether. Recent studies have proven that it in large doses does produce cloudy swelling of both liver and kidney cells, and hence its long continued use is accompanied by grave risks to these two organs that are liable to punishment in all pregnancies. It is well adapted to the control of the termination of the second stage, but because of its poisonous action on kidney and liver is being replaced by ether.

Scopolamin-morphine is used in labor, not with the aim of producing loss of sensation, anesthesia, or absence of pain, analgesia, but forgetfulness of pain, amnesia. It has been the most broadly heralded of all the agents in labor and so demands our most earnest study. The claims for it have undoubtedly been too great by some. But it does have a place in certain chosen cases, and should be so used when it is therapeutically indicated and not when demanded or rejected by the layman. Scopolamin-morphine amnesia, or the so-called twilight sleep, consists in the use of these two drugs in the dosage to produce a state of forgetfulness of pain. With this goes a certain degree of motor incoördination, excitement and delirium. The dosage of the drug is regulated to get these results. A fair working rule is scopolamine, 1-300 and morphine 1-8, and repeat in 3-4 to 1 1-2 hour. Then scopolamine every 1 1-2 hours afterward. Morphine 1-8 to 1-16 every 3 hours after the second dose, as indicated. These doses are, of course, regulated by the condition of the patient, as to the state of amnesia.

The action of scopolamin is not dangerous. No deaths have been reported from its use. The principal attack on scopolamin-morphine amnesia has been due to the morphine action. Morphine has a depressive action on children. Many cyanotic children have been reported in these cases and some deaths attributed to the use of morphine. The disadvantages of scopolamin-morphine are in (1) the excitement, delirium and motor incoördination that it produces, preventing the proper control of the patient. (2) It delays the first and second stages of labor. (3) It is time consuming, demanding the closest observation. (4) It fails in 10 per cent of cases. (5) The depressive action of morphine on children. Its advantage consists in (a) the amnesia of a very painful ordeal, (b) the rest obtained by the patient between pains.

Nitrous oxide-oxygen is given as an analgesic principally though it may be pushed to an anesthetic degree in labor. Nitrous oxide is quickly absorbed from the lungs and taken into the blood unchanged and is

quickly eliminated. Its action, before it was used with oxygen, was thought to be purely of asphyxia in replacing the oxygen of air. But getting the same effect with oxygen it is now thought that it has a direct effect on the brain itself, to prevent the pain impulses getting to or being registered by the brain cells. It thus annuls the suffering that would be caused by pain and prevents the shock that would result from such pain.

The technique of administering nitrous oxide-oxygen is as follows: At the beginning of the uterine contraction and before the beginning of the pain, the administration is begun. The patient takes one or two deep inhalations of pure nitrous oxide. Then she takes two or three more of nitrous oxide and 5 to 20 per cent of oxygen. The oxygen is added to prevent cyanosis or asphyxia. Usually by this time there is a condition of analgesia. This is complete, with the coöperation of the patient, early or at about the middle of the uterine contraction. The rest of the contraction is then practically painless. The administration is begun in the second stage of labor when the pains become more severe. It may be kept up several hours. One observer reports a case kept up for eleven hours. The usual case runs from two to four hours. The amount of the physician's time required for this work is one great drawback. That, with the cost, are the two greatest objections. But neither of these should stand in the way of good obstetrics. The progress of labor should be followed by rectal examination, or the patient may precipitate without her knowledge in the absence of pain. The obstetrician may administer the gases, or the administration may be given by another physician. Or the physician may, at the delivery, have the analgesia maintained by the nurse or pushed to anesthesia. Or, if it is desirable, the nurse may then administer ether or chloroform.

The disadvantages of nitrous oxide-oxygen are as follows: (1) The obstetrician or trained nurse should watch the case closely over the time of hard bearing down pains, as otherwise the patient may precipitate without her knowledge. (2) It has some mortality rate. Franke in the *American Journal of Obstetrics*, vol. 15, p. 630, after a review of many cases, places the mortality as follows: Chloroform, one in 3,000; ether, one in 30,000; nitrous oxide, one in 5,000,000. Miller thinks that nitrous oxide is a little more dangerous, and quotes cases that place the mortality between one to 100,000 and one in 750,000. (*Jour. A. M. A.*, LIX, 1847.) Most writers agree in placing nitrous oxide-oxygen as by far the safest anesthetic. Yet it has been used mostly by dentists who are not supposed to be able to eliminate the patient who is a bad risk. (3) The cost of the gas and the portability of the tanks and machine are real disadvantages, but are not to be compared with the relief of pain

obtained. (4) There are certain cases in which it may be contraindicated. These are atheroma, high blood pressure, and weakened heart muscle.

The advantages of nitrous oxide-oxygen analgesia are many. (1) It relieves the pain. (2) It prevents the shock to the nervous system. (3) It answers the requisites of a true analgesic and anesthetic for labor in its rapidity of action and evanescent character. (4) It gives better control of the patient than twilight sleep. Thus the sterility of the operation may be maintained. The patient can be directed to bear down and in this way labor is shortened 25 per cent. Twilight sleep lengthens both the first and second stages of labor. (5) It can be used by the patient, member of family or nurse with little direction, so as not to take so much of the obstetrician's time. These advantages have been summarized by Davis, of Chicago, from a detailed study of 154 cases in the following manner:

1. The pain of labor is as real as is any other pain, and should be relieved. Childbirth may be made relatively free from suffering.

2. While most of the drugs used in securing obstetrical analgesia have serious limitations and several contraindications, the nitrous oxide-oxygen analgesia may be used in practically all classes of cases. It has no contraindications other than a threatened rupture of the uterus, and then morphine is the analgesic of choice.

3. Morphine, heroin, chloral hydrate or scopolamin may be used to rest the patient in the event of a prolonged first stage of labor.

4. The nitrous oxide-oxygen analgesia is absolutely safe in the hands of any physician who understands the practice of obstetrics, and properly administered will relieve the suffering in every case in which it is used. The pain may not be entirely destroyed in every case, but is materially reduced and made bearable.

5. Women who have the analgesia during the painful stage of labor have shorter labors and do better afterwards than do those who have no analgesia or ether just for delivery.

6. From a study of 154 consecutive cases entering the maternity wards of the Presbyterian Hospital, Chicago, it would seem that the use of the nitrous oxide-oxygen analgesia reduces the duration of labor 25 per cent.

7. The use of nitrous oxide-oxygen does not interfere with the supply of milk, but, by lessening the shock, favors the secretion of milk.

8. The use of nitrous oxide-oxygen in the cases studied decreased the number and severity of the lacerations.

9. While the cost of labor is slightly increased from the use of the

nitrous oxide-oxygen analgesia, the cost is insignificant when compared to the relief of suffering. The cost of the gases used in the ordinary obstetrical case varies from fifty cents to one dollar per hour.

10. The use of nitrous oxide-oxygen analgesia will rob labor of its greatest terror. It is both sane and safe and it is a logical method of relieving the suffering of childbirth.

My experience in the use of nitrous oxide-oxygen dates back eight years when I first used it in the City Hospital, New York, as a preliminary to general anesthesia. In the last three years, I have revived my interest in it and used it about four hundred times in general surgery and obstetrics. My zeal in its use in obstetrics has increased much in the last year. I do not hesitate to promise my prospective patients a labor free of all severe pain, and of all pain if they will coöperate. A patient delivered two weeks ago that had dreaded a second labor said afterward that she had practically no pain until, unfortunately, the gas gave out. I had promised her a painless labor. I almost had to run for my life when the instrument that I depended on failed me.

CONCLUSIONS

1. The pains of labor should be relieved as an act of mercy and to prevent shock to the patient.

2. An analgesic in labor should be both rapid and powerful and yet evanescent.

3. Ether, chloroform, and scopolamin-morphine do not meet these requirements as well as nitrous oxide-oxygen.

4. Nitrous oxide-oxygen is the safest of all anesthetics. It can be used by any practitioner who uses ordinary care. It may be used with equal safety in home or hospital. The disadvantages of portability, cost, and added time required must be met by us in the name of better obstetrics, for healthier mothers and to avoid their unnecessary suffering.

5. The choice of an anesthetic should be determined by general rules as to which anesthetic is preferable in each stage of labor and chosen to meet the needs of each stage of each case.

MATERIA MEDICA AND THERAPEUTICS

VACCINES AND ANTITOXINS

Harold H. Newman, M.D., Salisbury

Since the advent of the diphtheria and tetanus sera and the work of Jenner and Wright on vaccine therapy and prophylaxis rapid forward strides have been made, but owing to exploitations for mercenary purposes, lack of clearness of the existing knowledge of immunity and eagerness of physicians to cure disease, much confusion has arisen. When the dust has settled from the chaotic condition, we will find that much of vaccine and serum therapy has yet to be learned, and that many of the marketed biological products are just in the experimental stage. The knowledge that has been gained by scientific investigation and in the hands of competent and reliable investigators is not always clear to the man who has not worked with these substances, for the same reason that one today cannot conceive of conditions at the battle-front who has not had some first-hand experience there.

Such an array of bacteriological products swarmed the market that in 1913 the Council on Pharmacy and Chemistry of the American Medical Association appointed a committee to investigate "Bacterial Vaccine Therapy, Its Limitations and Indications." I quote freely from this report throughout this paper.

To understand the indications and limitations of immune therapy a survey of the body's protective methods and its defenses are a great assistance. The defenses of the body to a certain extent are comparable to the defenses of a country. As each branch of the war department has its specific function, so likewise has the defenses of the body. As the artillerymen, aviators and infantry work in accord, so do the defensive agencies of the body in many instances. And it is this multiplicity of forces acting in the body that render confusion at times. The opsonic index as elaborated by Wright as a guide to the state of immunity has not always given the correct indication as to the amount of immunity, owing to the bacteriolysins and other active agencies.

Comprising the body defenses are the leucocytes (Phagocytes), specific antibodies, opsonins, agglutinins, bacteriolysins, precipitins, complement, etc. The leucocytes, opsonins to a certain extent and complement are always present in the blood, but leucocytes and the opsonin concentration can be increased under proper stimulation. The antibodies, precipitins, agglutins and bacteriolysins are never present until they are produced by stimulation of the body cells by specific antigens.

The cells of the body have a property of producing an excess of immune substance, once they have responded to foreign toxin and it is this continued excess over and above the amount required to neutralize the toxins of the invading organisms that the serologist strives to obtain.

To produce these immune bodies is the desire in the use of the vaccines, and it is through the use of the specific antigens that the desired result is brought about. When the foreign poison is first introduced into the body the cells thereof are greatly depressed and the body enters upon a phase known as the negative phase, at which point its protective measures against the invading foe are at its lowest ebb; but shortly, in favorable cases, a reaction occurs and the body begins to throw out the specific antibodies. Soon an excess of these is created and the body enters upon the positive phase. It is to further increase the concentration of the immune substances that additional stimulation is resorted to. It is thus seen that there exists a delicate balance in which the destructive and defensive forces are placed. This relationship may be easily disturbed under improper conditions and untoward results follow.

There is another interesting phase to the production of immunity. This is encountered in a condition known as anaphylaxis. I mention this phenomena that it may be known that the production of the body defenses is not brought about without danger. It seems that in this condition upon the further induction of foreign protein into the body that the already formed protective substances break the newly added protein too rapidly, and thus cause a marked reaction in the body.

There are four different types of vaccine:

1. Suspensions in salt solution or water of killed bacteria.
2. Bacterial products derived either from cultures or by the digestion of bacteria.
3. Bacterial preparations in which some of the toxic elements of the bacteria are removed by special methods.
4. Sensitized vaccines, in which bacteria suspensions have been treated with a corresponding immune serum, and thereby supposedly rendered less toxic and more effective in stimulating immunity, although their use is limited and they are to a large extent in the experimental stage.

We will limit this discussion to the bacterial suspensions in salt solution or water. Under this heading we have what is known as the autogenous, the stock, and the mixed vaccine. As the medical profession is striving to depart from snap diagnoses and employ concrete statements supported by facts and to get away from shotgun prescriptions and utilize specific treatment, little can be said for the stock and mixed

vaccines. The mixed vaccine is an insinuation upon the intelligence of the physician who employs it. For why is it necessary to drain the system into the production of so many immune bodies when one specific substance is all that is required? In producing these antibodies, we are dealing with God's most precious gift to man, and we should handle it accordingly, not using it as a hiding place for our ignorance of the existing disease. The stock vaccine has a little more ground for support, insomuch that it tends towards eliminating the formation of useless antibodies, in those cases where one particular organism is employed in the vaccine. But on the other hand, we must constantly remember that the bacteria, as people, have different strains. For instance, the staphylococcus aureus may have different strains, whereas one is producing osteomyelitis, another is causing furunculosis, and still another otitis media. Therefore the Council of the American Medical Association recommends the usage of autogenous vaccines in preference to the stock vaccines, as the former insures the formation of specific antibodies against the existing disease, whereas the latter is a shot taken in the dark at a mobile object. Where stock vaccines will effect a cure, autogenous vaccines will likewise do so.

The field of vaccines is limited to infections whose pathology leads to three classifications, namely, localized, general and intermediate. The localized conditions are too well known to enumerate. The general conditions comprise the bacteriemias, septicemias, etc. The intermediate conditions are those that for a time are localized and then the delicate balance of our offensive and defensive forces is disturbed and the infectious process heretofore localized is transferred into a general infection.

The indication for vaccine therapy is best laid down by Wolfsohn. Vaccines are indicated in the localized infections. Vaccines are contraindicated in the general infections, for why add more toxin to the body when it already has more than it can accommodate? The difficulties of using vaccines is in the intermediate group where that delicate balance between offense and defense might so easily be upset. Here this treatment should be left to the specialist who can follow the opsonic index and is more familiar with the immune problems.

The dose of the vaccine to be given varies. It is well to give as strong inoculation as the patient can bear. This will average 100,000,000 as a first injection, to be increased or decreased as the patient reacts.

The reaction of the patient towards the vaccine may be seen at the site of the injection as a slight redness or at the site of the lesion as an exacerbation or as a general reaction. The least reaction is too severe. The object is to produce the slightest reaction possible. The repetition of the injection is guided by the negative phase whose termination

should have ended prior to any subsequent injection or a continued negative phase will result, which is very undesirable and will defeat the proposed objective.

Some of the causes for failure are due to contamination by organisms from secondary infections, some by the causative organism being an anerobe and at other times the contaminations of pus from dead tissue, as a necrotic bone in the middle ear.

My experience has been with vaccines of the autogenous type made by my own hand. The making of these vaccines is a simple problem to the person having the laboratory facilities. An ordinary germ will grow rapidly in twenty-four hours, after which time the culture is added to salt solution, sealed in a sterile tube, shaken vigorously to separate the bacterial clumps, heated for one hour at 60 degrees C. After the heating the growth is tested as to sterility. If no organisms grow counting is resorted to. This is done by putting equal portions of bacterial suspension, human blood and noncoagulating fluid together and comparing the number of bacteria present with the known number of red blood cells. The vaccine is then put in separate ampules and is ready for injection.

I have obtained the best results in the treatment of furunculosis. In my treated cases there is yet to be a recurrence. The results in acne cases, whereas marked, have not equaled the results obtained above. The reason for the small number of failures in these cases I attribute mainly to the difficulty of growing the acne bacillus, which is an anerobe; and in addition there are constitutional factors which are difficult to remedy, such as intestinal autointoxication.

The history and production of antitoxin is too well known to repeat. I wish to call your attention to the work of Park (Trans. Assoc. Am. Phys., 1912, XXVII, 434). *Absorption of Antitoxin When Given Intravenously and Subcutaneously.* In this work Park shows that the maximum action of antitoxin administered intravenously is almost instant and continues for about ten days; whereas the maximum effect of antitoxin administered subcutaneously is not reached until the eighteenth to twenty-fourth hour and the effects continue about ten days. In desperate cases one can readily see the advantage of the intravenous injection. Large doses are recommended, to be repeated if deemed necessary.

Tetanus antitoxin is to be used for prophylaxis and treatment. Where tetanus bacillus contamination is suspected the injection should be used instantly in doses of from 1,000 to 2,000 units. Where the disease has developed it should be used intraspinously and intravenously. The intraspinous doses should be 3,000 units. The intravenous injection should be regulated according to the weight of the individual, 2,000

units for every 10 pounds in weight. The size of the individual, rather than the severity of the case determines the amount, as every case is very grave. Additional injections are advised on the fifth day for the antitoxic effect remains over that period.

DISCUSSION

Dr. E. J. Wood, Wilmington: I think it would be a reflection on the intelligence of this Society if we did not at least acknowledge the worth of the contribution. I think the one single statement that is made that the vaccines, as I understand it from the paper, do good in localized infections and do no good in generalized infections is eminently worth while. This was well borne out in typhoid fever. Several years ago, wishing to know the latest word with regard to the treatment of typhoid fever, I wrote to Dr. Billings in the University of Chicago, Dr. Fussell of Philadelphia and Dr. Christian in the Harvard Medical School, to find out what they thought was the best attitude in regard to the therapeutic use of typhoid vaccine, and they all agreed that typhoid fever should not be treated with the vaccine. I am very much obliged to you for just that one feature.

THE USE OF SOLIDIFIED CARBON DIOXIDE IN THE REMOVAL OF BENIGN AND MALIGNANT GROWTHS ON THE SKIN

G. H. Sadelson, M.D., Charlotte

It is well known that within the past few years the medical profession has extended its efforts in preventive medicine more than ever before. Along with the advances made in the etiology of disease, prophylaxis has kept more than even pace. Among other things, the premalignant lesions have received much attention. It is now an accepted fact that by the removal of the many precancerous lesions, true cancer is prevented, and a great many practitioners are advocating the radical removal of extraneous growths, even before they become strictly precancerous, as a wise preventive measure aside from the cosmetic effect which might be desirable.

Among other methods for the removal of the growths on the skin, be they either benign, precancerous or cancerous, I wish to call your attention to the use of the so-called carbon dioxide freezing process.

It may be of interest, if I spend a few moments regarding the history of this mode, which we shall be glad to note is of American origin.

Dr. William Allen Pusey, the eminent dermatologist of Chicago, was the first to use the solidified carbon dioxide in the year 1905. Previous to this, Dr. Dade had demonstrated the use of liquid air in the destruction of growths on the skin before the American Medical Association, and attracted a great deal of attention, with favorable comment. This gave Dr. Pusey his idea, and he soon thereafter brought out his process with the solidified carbon dioxide, which is now considered to be quite as efficient as liquid air, much more convenient, much less expensive and can be manipulated with much less danger.

The article used is the well known carbon dioxide gas brought to a solid form in the following way:

Starting, then, in the form of an invisible gas, it is brought under a pressure of from 850 to 1,000 pounds to the square inch. This converts it into a liquid. It is now confined in tubes or cylinders of steel, and in this condition is purchased of the manufacturer. There have been various devices used to control and hold it as it is drawn from the cylinder for use, but perhaps the best device yet brought out is the one known as the Gooseman apparatus.

The sudden expansion of the gas, now liquid, as it is set free from this great pressure by opening the valve on cylinder causes the gas to freeze into a snowflake looking substance and is thus called carbon dioxide snow. After gathering a sufficient quantity for use, it is then compressed with the apparatus into solid form, having somewhat the appearance of common ice. Now it is punched out of the press having the shape of a crayon and is ready for use. The temperature of this ice-crayon is 110 degrees below zero (Fahrenheit). This crayon is now held by wrapping in several thicknesses of chamois skin to protect the operator, and is applied with more or less pressure directly to the lesion to be removed for a varying length of time, scarcely ever exceeding ninety seconds. The longer held in place and the greater pressure the deeper it freezes. The tissues are quickly frozen into solid ice in appearance, which, after the crayon is removed, will thaw entirely out in one or at most two minutes. As we all know, intense cold is an anesthetic, hence the operation is practically a painless one. Shortly after this thawing an erythematous condition is found followed by more or less infiltration and consequent swelling. If the lesion is one where the epidermis is intact, such as we find in the nevi, most warty growths, angiomata, tattoo marks, fibromas, etc., a vesicle or bleb will usually form and if the distention is so great as to fear bursting it should be drained by making a small puncture for, of course, we wish to preserve this best of all coverings to protect the wounded tissues underneath.

When, therefore, the conditions are as above, we will find it unnecessary to put on any dressing, but in cases where the lesion is devoid of epidermis such as we find in the ulcerative stage of cancer, lupus vulgaris, the condition known as seborrheic keratosis and some others, then of course we would cover with a dressing as we would in any other open wound.

Now we will see the gradual shrinking and drying of the lesion from day to day and a dried scab has covered the spot. Under this ideal covering the healing process goes on until finished; usually requiring from 10 to 18 days. The scab drops off, having served its usefulness, and we always find, providing of course the operation has been properly done, a result as to appearance scarcely discernible from the surrounding tissues. In other words, the cosmetic results, are all that could be desired, the new-made skin being soft and as pliable as the surrounding parts.

It will be of interest, I think, to say a few words in explanation of the action of this intense freezing of the tissues that are operated upon and I wish to impress this because of its relation to the end-results, which I will speak of again later.

Cranston Low, of Edinburgh, says there are three factors at work:

1. Thrombosis of the vessels of the blood supply to the lesion frozen.
2. Direct injury to the tissues by the freezing and thawing.
3. Exudation of the fluid and cells leading on to absorption of inflammatory products.

The thrombosis of the vessels is undoubtedly an important factor; there is injury to the blood vessel wall and on that injured wall thrombosis occurs.

This plugging of the vessels is a reason why we should not have metastasis in the treatment of malignant conditions and this hypothesis is borne out by the experience of those who have resorted to this mode of operation. I may say that in my own experience I have yet to see a case where I could see that metastasis had occurred in consequence of the process used.

In the direct injury to the tissues Friedlander, of San Francisco says, "The tissues of low vitality are readily destroyed by a reaction that is not of sufficient intensity to damage the healthy tissue."

In other words it is selective in its action. Quoting again from Friedlander, "We have here an agent that can produce sufficient irritative action in the vascular tissues of an angioma for instance, to cause a partial or complete endarteritis leaving, however, sufficient cells to restore a practically normal skin. Thus it is apparent that the carbon dioxide ice does not act, strictly speaking, as a caustic or cautery since it does not destroy tissue immediately or indiscriminately but the ulti-

mate blanching of the skin and the reaction of the growth is due to an interstitial fibrosis and the obliteration of the vessel. Exudation of fluid cells leading to absorption of inflammatory products plays an important part. The whole frozen area is permeated with lymph and leucocytes; the latter by phagocytic action may remove inflammatory material and the former flushes out the tissues and also brings fresh lymph into the inflamed area."

In summing up then, we see, thrombosis and direct injury to the part lowers the vitality or causes the death of the abnormal cells, which are more easily injured than the normal and the inflammatory exudate aids in throwing them off or in absorbing them. Let us note here that the lesion, *per se*, dies and dries up for want of a blood supply.

Bunch, of London, England, in the *British Medical Journal*, says, "The resulting scarring is, owing to the gradual transformation of the tissue elements into fine fibrous tissue, much more supple and inconspicuous than when other methods of treatment are employed. Moreover, the exact amount of inflammatory reaction can be controlled, both as regards extent and depth."

The control of this destructive agent by the operator is well nigh perfect, for the moment the crayon is removed from the tissue further freezing and consequent destruction ceases and thawing begins. Note the marked distinction between this agent and the various pastes or plasters once so much in vogue.

Personally, I have treated angiomas, fibroid growths, many nevi, familiarly known as moles, a few birthmarks, warty growths of various kinds and some other extraneous growths.

In looking through my case records, which, I regret to say I have not kept but a short while, I find 38 cases of cancerous and precancerous lesions treated by this process. Twenty of them were malignant, running all the way from incipient cancer to conditions where much tissue had been lost and great deformity existed. In these cases, I found only six of these lesions to return requiring from two to several applications of the crayon, the case having gone beyond where hope could be held out for more than a suspension of the malignant process, but even in these cases it was a satisfaction to see that I could relieve pain and apprehension and prolong the life of the patient. In 18 truly precancerous conditions there was no return of the growth and I am sure a permanent cure was made in each case.

I pause here to respectfully urge upon you gentlemen the expediency of advising your patients who have skin lesions that are precancerous or that may become precancerous, that they should have them removed

effectively and at once, as a preventive measure; we owe this, I think, to our clientele as professional men.

I am confident that the time is coming when the general public will be educated to do this and when this advice will be the usual proceeding among the profession.

Such action will be similar to what is now being done regarding the care of the teeth and of the eyes during childhood and this kind of educational propaganda has been brought about within the remembrance of some of you here today.

If, then, cancer is on the increase, as many investigators assert, and if cancer is always preceded by another but benign condition, which is also held, and this benign condition is easily and permanently curable, then the wisdom and obligation of your aid is easily seen.

In conclusion, while I would not by any means wish to convey the idea that this is always the best method to use in every case, especially in malignant cases, but I do wish to say that in my advocacy of the use of the solidified carbon dioxide, I believe we have in this a useful adjunct in the removal of extraneous growths for the following reasons: It is inexpensive, it is practically painless in its action, requiring no anesthetic either local or general, scarcely ever keeping the patient from his usual occupation, it is selective in its action, it is effective and the end-results, or what is called the cosmetic results, are excellent.

THE THERAPEUTIC VALUE OF REST IN THE MANAGEMENT OF TUBERCULOSIS PATIENTS

W. H. Sherrill, M.D., Sanatorium

Invaluable as are good food and fresh air, in tuberculotherapy, they should not supplant or take priority over the importance of rest. Looking back over the past, and reviewing the literature on the subject, exercise has been advocated in the treatment of tuberculosis since the time of Sydenham, the great English physician who lived in the seventeenth century. Unfortunately, today the wonderful curative power of rest is not generally recognized.

Even Brehmer, the founder of sanatorium treatment, did not have his patients exercise with the primary object of curing the tuberculous process. On the other hand, he believed that the disease developed only in individuals who had small, weak hearts. Misguided by this theory, he advocated that his patients should take long walks by the mountainsides, with the hope of strengthening their hearts. On the contrary, he

was aware of the fact that over exertion and fatigue would do harm, and realized the necessity of careful supervision of exercise. His patient, pupil and assistant, observing the deleterious effects of exercise, saw how the patients would do better during stormy weather in the winter when they could not be out-of-doors on the mountainsides of Silesia, where the sanatorium was situated.

Dettweiler, contrary to his teachings, advocated in his sanatorium later at Falkenstein the value of rest in treating tuberculous patients. He built open-air porches where the patients could recline and rest during the day and return to their rooms at night.

Edward L. Trudeau learned of the work of Dettweiler as early as 1882 from articles that appeared in the *Practitioner,* an English journal. Inspired by what he had learned, he planned, with the approval of Dr. Alfred Loomis, the Adirondack Cottage Sanatorium at Saranac, which was opened in February, 1885. Although the pioneer of the rest cure for tuberculosis in this country, he was a strong advocate of rest in the management of tuberculosis until his death in 1915. Like all great men, he stood his share of abuse, many times being sat upon in medical meetings by the gentlemen on all sides, who said "rest was very well, but how was a consumptive to keep up his appetite unless he exercised?" Exercise in a normal healthy individual is a necessary physiological process. In disease this is different; most emphatically is this true in a chronic wasting disease such as we have under consideration. It is only necessary to rehearse briefly the physiology of exercise. Any increased functional activity of the human system demands an increased expenditure of the chemical resources of the body. The food products which have been stored up for further use are burned up at a faster rate to supply the necessary energy. The waste products cannot be gotten rid of fast enough and the result is an over accumulation of lactic acid and carbonic acid gas, which in large quantities are very depressing and distinctly harmful to the human body. Exercise, then, causes the heart to beat faster and a rise of blood pressure, accelerates the flow of blood and lymph. It distinctly increases the respiratory effort, causes the patient to become dyspneic, to have loss of appetite, digestive disturbances, various nervous manifestations, such as headaches, irritability, insomnia and most infrequently melancholia. It also aggravates an already stubborn temperature, which is only a manifestation of some infection. If this is amenable to any treatment it is absolute rest in bed.

In making brief mention of the pathology of pulmonary tuberculosis it is well to keep in mind that in the beginning of the disease the small tubercles are scattered through a small portion of the lung. In these tubercles lie the tubercle bacilli, which give off toxins to weaken the

body. Nature is trying to wall off, to imprison the germs by forming scar tissue about them. At first it is very, very delicate. A cough or deep breath or sudden exertion which causes contraction of the thoracic mucles may readily tear down and destroy the beginning formation of elastic tissue and cause a dissemination of the tubercle bacilli to healthy portions of the lung. Recovery from tuberculosis consists first in walling off the diseased areas, which can be most successfully accomplished by rest, and by maintaining the strength of the wall encapsulating the diseased parts, so that the bacilli are locked up and will not be disseminated to other portions of the body.

Rest is a relative term. At the outset the importance of absolute rest is carefully explained to the patient. If he is made to realize that it gives the quicker and surer results, he will often take up the treatment cheerfully. He must feel confident that he is following the wisest course. The term "rest" in phthisiotherapy does not merely mean stopping work, change of occupation, a trip, "roughing it," or other form of diversion. The patient should be placed out-of-doors, if possible, absolutely at rest in bed. Meals are served in bed. The patient is made as comfortable as possible. Remove all mental stress and strain. Visitors are not allowed unless they are cheerful to the patient. A good, nourishing diet is provided.

The basis of the rest treatment is keeping the lungs at rest in order to promote healing. As it is impossible to keep the lungs at absolute rest, the rest of body and mind lessens the work of the lungs and promotes the formation of scar tissue. According to the severity and extent of the diseased process in the lungs, months or even years must elapse after the development of a fresh tuberculous process before pulmonary exercise can be taken with safety. "Long do the live coals glow unnoticed and unsuspected beneath the dead ashes." (Penzoldt.)

Rest should be insisted upon in every case of tuberculosis. If in doubt, place the patient in bed. A few months rest will not harm any one, while many observers have seen scores of tuberculous patients harmed by exercise. The experience of every physician who has observed many cases of tuberculosis shows us that over exertion lowers vitality and permits an increase of bacillary activity. Many cases of active disease date the onset from physical over exertion.

Surgeons and laryngologists have taught us that immobilization of the parts affected promotes healing. What would we think of a surgeon today who advocated graduated exercise in caring for a case of tuberculosis of the hip joint, or a laryngologist advising the use of a tuberculous larynx in the form of singing or making speeches? That is one of

the main reasons why tuberculosis of the intestines is so obstinate; the bowels cannot be made to do the minimum amount of exercise.

When a patient has become cachectic, emaciated and has loss of weight, strength and appetite and all the train of symptoms which accompany the later stages of tuberculosis, it is not necessary to insist upon going to bed, as the patient finds out for himself that it is the only way to exist. Rest in bed, even in a febrile tuberculosis where the symptoms are only suspicious and a few physical signs detected upon a thorough chest examination, should be insisted upon. In all cases of active disease without rest it is impossible to get the best results. Even with prolonged rest, with toxemia and a continued temperature the patient may go on to death.

Only brief mention need be made to the importance of rest in bed in every case of pulmonary hemorrhage. Rest should be enjoined at the least show of blood, and should be maintained until all danger of hemorrhage has subsided.

Exercise is prone to increase cough, hence cough is a dangerous form of exercise, and the best means of controlling a constant, excessive cough is by absolute rest and directing the patient to use every means to suppress it.

The length of rest depends absolutely upon the severity of the infection, the extent of the lesion, the resistance and general condition of the patient. The initial treatment of every patient in whom a tuberculous process is demonstrated, whether by physical signs or symptoms, should be placed absolutely at rest for a few months. Where there is a moderate degree of damage, or where the lesion is extensive the period of rest should be longer. It is universally conceded that when active symptoms are present the only treatment is rest and quiet.

A few years ago the trend was for vigorous exercise, in the form of gymnastics and particularly farm work, for patients in some of our institutions. The idea was to inoculate patients with their own tuberculin, called autoinoculation. Various observers reported beneficial results. Suffice to say that today the best authorities have come back to the rest cure. It can readily be seen that the exact dosage of this form of inoculation cannot be governed, and that great harm has been done to many patients by exercise.

Objections to rest may be summed up as follows: That it may make a loafer out of a previous industrious patient. This is not true, as can be attested by hundreds of sanatoria workers throughout the country. It does not weaken the heart muscle, as was formerly believed. After the condition of the patient permits, by gradual exercise the heart is able to meet the reasonable demands made upon it. It may be advanced that

each patient should be treated as an individual and not routinely. But the quicker the affected parts are put to rest, the quicker and surer will the lesion heal. No physician would think of giving one patient rest, with pneumonia or typhoid fever, and another exercise. Rest does not mentally depress a patient, if at the outset the beneficial results are explained. Cheerfulness as a rule is the predominating attitude.

CONCLUSION

Tuberculosis is a curable disease. The fact should be remembered that rest is of the utmost importance in the management of every patient, and yields better and quicker results than any known method.

It takes a long time for a tuberculous process to become inactive after once being lighted up. After all active symptoms have disappeared, any form of exercise should cautiously be prescribed; as an exacerbation is always more resistant to treatment than first breakdown.

If it is explained to every patient that the quicker and surer results are obtained by absolute rest in bed out-of-doors, he will usually take up the treatment cheerfully.

THE INSTITUTIONAL AND AFTER CARE OF DRUG ADDICTS

W. C. Ashworth, M.D., Greensboro

In general the public is either ignorant or prejudiced in regard to narcotic drug habituation, and aside from a small group of professional men, only those can appreciate the magnitude of the evil who have fallen its victim, or otherwise had an opportunity for close observation of same. It is signally unfortunate that the drug evil has not received the attention which it not only deserves but imperatively demands, and this at an age when scientists, legislators, philanthropists and social workers, professional and laymen are incessantly at work in the service of a number of causes, which in the last analysis are all aimed at one and the same object, namely, the conservation of human life. Notwithstanding the enactment of stringent laws and regulations, the addiction to habit-forming drugs shows no decrease, hence it is the manifest duty of society to do its utmost to combat the evil. No measure of social welfare can be attained by charity alone, in fact humanitarian sympathy must take the place of charity if we are to succeed in combating the numerous evils that undermine the nation's vitality.

The crusade against tuberculosis was begun twenty years ago—the

personal campaign of a small group of individuals; today it is a national cause and while there is much to be done yet, noteworthy results have been achieved in the fight against the great white plague, both by public and private initiative.

The ordinary addict does not use morphine for the supposed attending pleasure, but solely for the support to function, stimulation to circulation, maintenance of nerve balance and relief from impending collapse, therefore, his need for morphine becomes as inevitable as that for food and air.

After the habit is well established, failure to administer the drug causes a chain of symptoms, which vary only in intensity in the different cases. These symptoms are, in a general way, as follows: vague uneasiness and restlessness, with a sense of depression, followed by yawning, sneezing, hypersecretion of mucus, nausea, vomiting and purging, twitching, jerking, and cramping of muscles, abdominal distress, cardiac and circulatory insufficiency and irregularity, drawn and haggard faces, pallor deepening to grayness, exhaustion, collapse, and, at times, death.

The general principles of treatment for those addicted to narcotics consist in (1) the isolation of the patient so that his access to the drug, save when administered by his physician, is absolutely prevented; (2) the employment of full rest methods with the application of all the procedures included, as absolute rest in bed, careful regulation of all of the functions, especially of digestion, full feeding, bathing, massage, and, perhaps, electricity.

The first step in the treatment of drug habits in general, and especially the morphine habit, is the withdrawal of the drug. Some writers advocate immediate withdrawal, others a rapid withdrawal, and still others, a very gradual one. I, personally, deprecate the making of any hard and fast rule as to the rapidity with which the morphine should be withdrawn, since different factors enter into each case and prohibit any routine therapeutics, although, of course, the patient should be weaned from his narcotic as rapidly as possible. The drug may be withdrawn abruptly if the patient is fairly robust, if the habit is not of long duration, and the daily dose has been less than five grains of morphine. But, if he is of the neurotic type, or if the drug has enfeebled his constitution, the withdrawal must be gradual, covering a period of from one to three weeks, according to the individual.

When the narcotic has been taken hypodermically, it is usually advisable to stop the use of the needle before undertaking the withdrawal of the morphine. The same amount that has been taken by hypodermic injection may be administered by the mouth for several days

until the patient has become accustomed to the oral ingestion of the narcotic.

Even after the drug has been entirely withdrawn, I regard the handling of the case as "merely begun"; any form of treatment in which the patient is not controlled for from three to six months being practically useless.

A large number of drugs, usually nerve-sedatives, have been highly lauded as specifics in the treatment of morphine and other drug habits. It must be remembered, however, that these remedies are merely symptom remedies. There is no substance known to man which is capable of regenerating a diseased moral nature, and although it is possible that some of these systems of treatment may make the withdrawal period less painful, none of them can be regarded as curative in the proper sense of the word. Moreover, it is extremely doubtful whether any of them are more valuable than the well known nerve-sedatives.

When referring to the quieting of the general nervousness, which is one of the predominant symptoms accompanying the withdrawal of opium or morphine, in my opinion more can usually be accomplished by moral support and the use of physical agencies than by drugs, and especially hydrotherapy in the form of the Turkish bath, the hot or cold wet pack, and alternate hot and cold douches. These measures have also the indorsement of other writers in connection with massage and various forms of electricity.

The drugs that take first place as nerve-sedative are the bromides and the solanaceous alkaloids. One physician begins with 100 grains of the bromides daily, rapidly increases the dose to 200 grains, continues at this for three or four days, and then stops its use. Another advises using the bromides only at night, using a combination of 20 grains of sodium bromide with 15 minims each of tincture of cannabis indica and tincture of hyoscyamus.

Wood refers to the usefulness of hyosin in such cases, and to Dr. Lambert's claim of remarkable results from the use of enormous doses of hyoscin hydrobromide in treating drug habits, but thinks that probably, his mode of treatment is of no greater value than any other symptom treatment.

Some writers have recommended dionin, a synthetic morphine derivative, as completely relieving the craving for morphine during the period of withdrawal. Alcohol and cocaine should never be used for this purpose, on account of their liability to form a new drug habit.

During the withdrawal period of treatment, when there are extreme intestinal disturbances, the diet should be almost completely restricted

to broths and soups, and when meats are allowed, the white meats (fish, oysters, breast of fowl, etc.) will be found more beneficial and more easily digested than the red meats, such as beef, lamb, etc. I allow milk, vegetables, and fruit, with a small amount of meats to my patients.

Nausea is often relieved by the carbonated waters, while such stomachics as oleoresin of pepper or of ginger are frequently helpful.

During convalescence treatment should include the toning up of the general health and the nervous condition of the patient, and to this end, proper regulation of the diet, out-of-door exercises under guidance, and such tonics as tincture of nux vomica or hydrastis are recommended. The patient must be carefully watched to guard against his securing any form of opiate. Even after a so-called "cure" it would be well for him to take a long vacation, camping in the woods before returning to his usual avocation, in order to avoid a relapse. In my opinion the treatment of morphinism should cover a period of from three to seven months, or even over a year, the patient still remaining under the supervision of a nurse after the first three months of "full rest" methods, since "In no class of patients is relapse so apt to occur as in morphine cases, and it is for this reason that every possible precaution should be taken, provided the patient's means permit it."

My usual practice in treating the morphine or opium habit is to withdraw the drug very gradually.

If the patient has been in the habit of receiving hypodermic injections, it is my plan not only to reduce the dose gradually in the manner indicated (so slowly that the diminution of the dose is practically imperceptible, later, more rapidly), but also to begin adding to injection small doses of strychnine sulphate, say 1-50 of a grain, and if the skin be very moist, small doses of atropin sulphate, say 1-200 of a grain. As the dose of the morphine is diminished, hyoscin or scopolamin should be added to the hypodermic injection, first in small and then in larger doses. As a rule, the atropin may be discontinued if the scopolamin be given.

In the after-management of such cases all fatigue and strain, excitement or worry must be avoided.

Of course every effort should be made in the treatment of all drug habits to discover and remove the underlying cause for the patient's addiction, whether it be of a functional, organic, or psychic nature.

Suggestion, both with and without hypnotism, is also advised for the treatment of drug habits, and while strongly advocated by some medical writers, is regarded as of little value by others. But it cannot be denied

that treatment by psychotherapy of some form is needed for the strengthening of the will power, the reëducation of many drug and drink victims.

The first step towards renunciation should then be the restoration of self-respect, the demonstration that self-mastery is recoverable, and the inculcation of the conviction that with suitable therapeutic, hygienic, and dietetic measures methodically carried out, failure is out of the question. This moral support must, of course, be seconded by the association of whatever therapeutic, hygienic, and dietetic measures may be necessary for the prevention or the relief of the underlying factors of somatic craving, and which in each case are obviously suggested by sympathetic indications.

T. D. Crothers, editor of the *Journal of Inebriety,* in a recent article on the "Psychic Treatment of Spirit and Drug Neurosis," says among other things:

> One central fact should be the controlling power, namely: to train and develop the mind and body out of the present condition and toward an ideal of new vigor and strength. The theory of the subliminal, or the inner consciousness, to obtain mastery over the degenerative functional impulses, is most suggestive and the application of which seems to be unlimited. It is clear that physical training and the removal of the toxic causes, and the improvement of nutrition, open a larger scope for the test of this theory, which is practically the influence of mind over matter. We are all aware of the potent power of this psychic force, seen in every great cult that is growing in this country. We are already aware that the great armies of spirit and drug narcotics in every section of the country should be halted, restored, and saved from the jail and almshouse. With a wise application of psychic and physical remedies this can be done. The toxic neurotic with his damaged pain centers and faulty resisting powers, low vitality, needs something more than physical treatment. He needs psychic remedies to turn his feeble mentality into new plains of thought.

Dr. Ernest S. Bishop, who has had a vast experience with narcotic addicts, says in his recent (1916) article on Morphinism:

> Morphinism fundamentally is a disease. It shows stages and variations just as do other diseases. It is complicated by or complicates other diseases exactly as do other morbid processes, and every case is absolutely individual. It is just as reasonable to treat all cases of pneumonia or typhoid or cardiac diseases according to any one method as it is to so treat morphinism. From my experience, I conceive it just as impossible to honestly promise short duration cure for all cases of morphinism as it would be to do so in any other disease. Rational treatment and prognosis must depend in it, as in other diseases, upon its stage and development; upon its complicating factors; and upon the condition of the patient—mental and physical—in the individual case.
>
> For its accomplishment I have no "cure," no routine method, no special "treatment" to advance. I know of no drug or combination of drugs which can properly be called a "specific."

Further he writes:

The mere taking away of morphine from a morphine addict is simply one step in the conduct of that man's case; and it is by no means the most important step. It can be accomplished in a number of ways, and its procedure is a matter of selection in the individual case to meet the indications of that case. Once it is started it should be done as rapidly as possible, and without undue suffering and strain. In the treatment of a case, of far more importance than any method of morphine withdrawal is the sufficient understanding of the disease mechanism and its symptomatology, and the ability to accurately estimate the patient's bodily need, and the maintaining of him in functional and metabolic addiction drug balance, and the securing of good tone and nutrition before withdrawal.

C. C. Meacham, writing in 1916 on Morphinism, says that a drug-diseased person of six to ten years standing should be kept under treatment and observation for at least a year, and better, for eighteen months.

EYE, EAR, NOSE AND THROAT

ESOPHAGEAL STRICTURE

J. B. Wright, M.D., Raleigh

All diseases of the esophagus are essentially stenotic or nonstenotic. From my subject I could deal with every phase of esophageal strictures discussing them historically, pathologically, etc. It is my purpose in this paper to discuss esophageal strictures as they are at the present treated by our leading esophagoscopist, that is by direct endoscopy. I make no claims to originality in what is said in this paper, but shall briefly describe what I have been taught in the past three years, combined with my very limited experience. In the meantime, I shall also freely quote Chevalier Jackson's recent book, *Peroral Endoscopy and Laryngeal Surgery*. It will be impossible for me to properly mark in quotations all that is said in this paper that also is in his book, for I have been in his clinics and taken his courses for the past three years. So much by way of explanation.

Etiology. The most frequent causes are swallowing corrosive poisons, especially caustic alkalis. In the rural districts where home-made soap is still in evidence, the old ash-barrel and the grocer furnishing the lye, makes a very frequent cause for a child getting a swallow of either the lye or the drippings from the ash gum. Washing powders nearly all contain to a more or less degree some form of caustic alkali.

All forms of cancerous conditions of the esophagus as it progresses finally cause esophageal stenosis, papillomata, ephithetioma and tubercular lesions are also causative factors in esophageal strictures. The swallowing of strong acids, syphilis, scarlatina, diphtheria, erosions due to the debilitating effects of typhoid fever; for example, the decubitus ulcers following typhoid fever, in which when healing takes place forms cicatrices. Esophagitis, or any condition causing an erosion or wound in the mucous membrane lining of the esophagus, when healing takes place, can be the cause of a stricture. One of the cases I now have under my care gives a history of cutting his esophagus by swallowing a piece of sharp beef bone three years ago. All the other cases I ever saw were caused by swallowing a solution of lye.

Symptoms. These are not hard to ascertain. The patient plainly tells you, or you readily see if the patient is an infant, that there is something wrong with the act of deglutition. If a patient has difficulty in swallowing, or regurgitates, or spits, or vomits up his food, or chokes

or coughs when attempting to swallow, and this condition lasts for several days, together with a history of having swallowed a caustic, or some other evidence pointing toward a damaging of the esophagus, then it is wise to suspect a mechanical obstruction of the esophagus. Yet, with all the evidence pointing toward esophageal stricture the esophaguscope should be used in every case. It requires but a very few moments to look into an esophagus with an esophaguscope, and it does not require either a local or general anesthetic, it will be a great achievement for our specialty when the commonsense practice of passing the esophaguscope more frequently for diagnostic purposes becomes a more usual custom. When the esophagus is inspected then and not until then can a real positive diagnosis be made. It is no more justifiable to treat an esophagus or ignore esophageal symptoms without an esophaguscope than it is to treat a patient with uterine symptoms without a local examination. I shall not attempt in this brief paper to discuss all the methods used in examining the esophagus.

Diagnosis and esophaguscopic appearances of cicatricial stricture. No endoscopist can make a diagnosis of an esophageal stricture unless he is thoroughly familiar with all the various pictures to be obtained from a normal esophageal mucosa. He may be confronted with a variety of problems, for instance, he may be consulted for a complete stenosis, and upon a thorough examination it may be found to be a particle of food acting as a plug in the lumen of the stricture. This, I have never had to occur in my practice. Jackson says it is not a frequent occurrence because the patient soon learns to produce vomiting artificially and thereby relieves the stricture.

When a stricture is seen through the esophaguscope it appears as a whitish spot or band. If we are not familiar with the normal appearances encountered, we certainly will never be in a position to use an esophaguscope intelligently; hence, I grasp this opportunity to urge every member of this Society who is attempting to do this work, to make a firm resolve to use the esophaguscope more for diagnostic purposes in the future than he has been doing in the past. It is essential the endoscopist should be familiar enough with the field of operation to at once recognize a stricture by sight and not be lost and not know where he was or what was before him. If this is the case, there is but one thing to do and that is to familiarize ourselves with the appearances of an esophagus seen endoscopically. You cannot learn this from textbooks or magazine articles or the cadaver, it can only be learned from experience on the living.

Under the head of diagnosis, I will say all the symptoms previously mentioned and the direct inspection of the pharynx and cricopharyn-

gens with the esophageal speculum, and then inspection of the esophagus with the esophaguscope are all essential in making a diagnosis and too, the esophaguscopist must never forget the X-Ray, for it is one of the most important steps to be taken in making not only a diagnosis, but excluding complications and confirming the esophaguscopic findings. The X-Ray is not nearly so essential in strictures as it is in foreign-body cases.

Position of stricture. I have had only five cases of esophageal stricture. Four of these were from drinking solutions of lye, and one from getting esophagus damaged by swallowing a sharp piece of beef bone cutting the esophagus. All five of these cases were in the upper third of the esophagus near the cricopharyngus. All were single except one, and it was double, the second stricture being a short distance below the cricopharyngus.

Prognosis. The prognosis of untreated esophageal stenosis is unfavorable as far as recovery is concerned. There probably never was a complete spontaneous recovery. The dangers are not so great since we are able to treat each case by direct inspection and see definitely what we are doing. The old blind bouginage method was far from being free from danger. With a careful painstaking operator the most of the cases due to swallowing caustics can be cured by the direct inspection of each case, and never passing a bougie except by direct inspection with the esophaguscope or the esophageal speculum in case the stricture is at the cricopharyngus.

Treatment. The patient is placed on the operating table flat on his back, with the middle of his shoulder blades (scapulæ) even with the end of the table. An assistant holds patient's head, flexing head backward as far as possible, the axis being at nape of neck, not bending neck backwards, with assistant's right arm under patient's neck holding bite block in mouth with forefinger of his right hand. With thumb of left hand on patient's forehead and fingers on occiput constantly flexing head backward and at the same time holding head slightly above the level of the table. With patient thus, the operator introduces the esophaguscope, if he is thoroughly familiar with his work. I have had difficulty in getting by the tongue and cricoid folds, and fearing I might do damage to the patient and also realizing the greatest danger point is at the cricopharyngeal fold or stricture, I have adopted the plan of introducing the esophageal speculum noticing the epiglottis as I pass down and after being sure I am below the epiglottis the cricoid eminence or fold appears. I then have the nurse hold the speculum lifting upward and forward but being careful not to use the front teeth as a fulcrum, the esophaguscope is easily introduced through the speculum, the handle of the esophagu-

scope always pointing toward the ceiling. The esophaguscope is easily passed into the esophagus in a downward and backward direction until the stricture is reached with a thorough knowledge obtained by the previous history. With the X-Ray the picture that presents itself there is very little cause for not easily recognizing the stricture when reached by the esophaguscope. When stricture is reached the esophaguscope, of course will not pass farther; by gently manipulating the esophaguscope the small lumen of the esophagus can be found, then I pass a small silk-woven bougie fastened to a sixty m.m. steel rod as described by Jackson, p. 44, in his recent book. While the esophaguscope is still in position I pass two or three sizes; these treatments are now given every fourth day and is done in my office. Jackson describes five essentials in his method of passing the esophaguscope by sight, namely:

1. The correct high low position, sequence of the patient.
2. A correct knowledge of endoscopic anatomy of the esophagus in the living.
3. A clear conception of the direction and changes of direction of the esophageal axis.
4. A correct general sense of direction that enables the endoscopist to point his esophaguscope in the general direction of the esophagus.
5. A clear mental image of the esophagus and its relations to the esophaguscope.

With these five rules clearly in the operator's mind he only has to keep in mind the five landmarks of the esophagus, namely:

1. The cricopharyngeal eminence.
2. The crossing of the aorta.
3. The crossing of the left bronchus.
4. Hiatus esophagus.
5. The upper thoracic aperture.

So much for passing the esophaguscope, and locating, and recognizing the stricture. That I may best be able to explain my treatment of these cases, I shall briefly describe two cases I have treated:

Case 1. July 13, 1915. C. B. Barber's child. 18 months old. Swallowed small amount of concentrated lye two months previous. Was getting so it could not swallow any solids or liquids, only poorly. With the esophageal speculum I located the stricture at the cricopharyngeal fold, and passed the olive bougie, passing the three smaller sizes the first treatment. I waited ten days and passed the same three sizes, and waited about a week and passed the same three sizes and increased a size larger. I kept this up, passing these olive bougies about once every week or ten days until January 1, 1916, when patient came about once a month for about three months. Child could eat any and everything as though his throat had never been damaged.

Case 2. J. J. Boyett's child, 2½ years old. Came to me July 26, 1915, giving history of having gotten some concentrated lye off table while mother's back

was turned, in April of the same year. After the child's mouth got well it could eat any and everything without difficulty in deglutition, but in about two or three weeks could not swallow solid food well. This condition very rapidly increased until July 26, when child was brought to my office very much emaciated; looked as though it were in the last stages of a long drawnout attack of iliocolitis. I failed to record what size bougie I used on this case at first, but as best my memory serves me I had great difficulty in getting anything through at first, and I used a whole bone filiform bougie, and finally eased it through the lumen of the stricture, and then threaded a small sized olive bougie on the filiform and in this way passed my olive bougie. I then secured the Jackson silk-woven bougie mounted on a small steel rod. I used these up to the largest size, passing one every week, and the case rapidly improved, soon gaining in weight and strength. The case was then dismissed as cured, January 3, 1916.

Case 3. Mr. W. D. D., farmer, age 44. Previous history, negative. Wassermann, negative. Well nourished. Gave a history of swallowing a piece of roast beef at a Raleigh restaurant about three years prior to his first visit to me. His throat was very sore for a day or so, then he consulted a general practitioner (I do not remember the name) who removed a sharp piece of bone from his throat. After the removal of the bone his throat very promptly healed. About a year and a half later he began having a slight difficulty in swallowing large mouthfuls of poorly masticated solid food. This condition gradually became worse until he could not swallow solid food. He then consulted me on September 21, 1917. He said if I could get the obstruction out of his throat he believed he could swallow. To use his own language, he had a lump that got in the way of his food and kept it from going down. An examination with an esophageal speculum showed at the cricopharyngeal fold a flap of tissue, resembling, in size and appearance, the epiglottis. I bit off a piece of this flap and had it examined and found it to be a papilloma covered with normal epithelium. I have been passing a No. 26 Jackson bougie every fourth day.

The other two cases have nothing special to report. Simple cases of stricture due to swallowing concentrated solution of lye.

DISCUSSION

Dr. H. M. Bonner, Raleigh: I am glad to hear that cases of stricture of the esophagus after the taking of lye are usualy treated satisfactorily. I have seen only one case. This child had taken lye six or eight weeks before I saw it. When it came to me it was breathing badly, evidently had gotten some lye in upper part of larynx. I could not pass a bougie of any size through its esophagus. Three nights later I did a tracheotomy under cocaine.

On the sixth day a gastroctomy was done with the hope that a boguie might be passed upward from the stomach, and too, that the child might be fed. All efforts at passing a bougie failed. The child was fed through the gastroctomy wound until it died, about two weeks later. The child starved to death.

Dr. J. M. Lilly, Fayetteville: I have never used the esophaguscope, so my discussion of this paper will be from the standpoint of the treatment of this class of cases with the linen and the olive-pointed metal bougie, some eight or ten cases in all. I have worked in Dr. Johnston's clinic in Baltimore and seen him do this work but have never had sufficient experience to warrant me in undertaking the direct instrumentation.

My results have been good except in one case, an infant only a year or two old, unconscious when I first saw it and died next day after dilating. It is possible that I perforated the esophagus instead of dilating the stricture. The other cases have all been of rather long standing, some as long as ten to twenty years.

I have in mind a recent case which came to me with a history of having gotten a watermelon seed in his throat and for a week had been unable to swallow even water. I passed small bougie nearly to the stomach and there met with firm resistance. I had gotten no history of any previous trouble but at this point questioned him and found that he had taken lye in infancy and at times had had choking spells when swallowing solid food. I recognized the fact that I had a strictured esophagus to deal with and dilated it successfully. Another case a few years ago the stricture was completely closed by the hardened lens of a fish's eye acting as a ball valve, the passing of bougie caused muscular effort to expel it and the ball was vomited, then the stricture dilated by the usual method of bougie of gradually increasing calibre.

In regard to Dr. Murphy's cases where intubation was necessary in noninflammatory throat cases I recall a case treated by Dr. Smoot and myself with an indefinite history of diphtheria a few weeks before, but with a throat at that time apparently normal but cyanotic and gasping for breath. We attempted to intubate and did introduce the tube into the larynx several times, but it would not stay. In desperation we did a tracheotomy, after which the child rapidly recovered but had to wear the tube for more than a year, only recently being able to breathe with it out. Our opinion in this case was that there was post-diphtheritic paralysis of the glottis and no muscle tone to retain the tube.

ADENOIDS IN CHILDREN

A review of the Lymphatic Circulation of the Pharyngeal Region

C. N. Peeler, M.D., Charlotte

In a brief review of the lymphatics of the head and neck it is our purpose to emphasize some practical considerations in regard to the drainage from the nasopharynx.

The lymphatic nodes of the head are arranged in groups, which are located between the external occipital protuberance and the angle of the jaw. The nodes of the neck lie along the course of the internal jugular vein; composed of superficial and deep sets. In considering the drainage of the nose, pharynx, mouth and ear, we should review: 1. The posterior and anterior auricular nodes lying behind and in front of the ear, respectively. These receive afferent vessels from the temporal region of the scalp, auricle, external auditory meatus, and from outer portions of the eye-lids. The afferent vessels pass to the deep cervical nodes. 2. Submaxillary nodes form a chain running along the lower border of the horizontal ramus of the lower jaw, as far forward as the anterior belly of the digastric muscle. The afferent vessels come from the submental and facial nodes, upper lip and outer surface of the nose, the inner portions of the eye-lids, the lower lip, the gums of both jaws and anterior part of the tongue. Their afferents descend into the deep cervical nodes especially those situated about the bifurcation of the common carotid artery. 3. The retropharyngeal nodes are located along the junction of the lateral and posterior surfaces of the pharynx. They are imbedded into bucco-pharyngeal fascia, and receive afferent vessels from the upper part of the pharynx, and from the mucous membranes of the nose. Their afferents pass to the upper deep cervical nodes. (Other groups that might be mentioned are the submental, facial and the lingual nodes.) 4. Superficial cervical nodes, located in the superficial structure along the course of the external jugular vein, anterior and lateral surfaces of the larynx and trachea. These receive afferents from the pinna of the ear and parotid gland, larynx and trachea. The afferents open into the deep cervical nodes. 5. The deep cervical nodes, from ten to sixteen in number lie along the course of the internal jugular vein extending from the tip of the mastoid process down the neck and covered by the sternomastoid muscle. These nodes are constant in position and receive afferents from all the preceding groups mentioned, and their afferents pass into the right and left lymphatic ducts.

Practical considerations. The lymphatics of the tonsils are numerous and pass with those from the basal region of the tongue to the superior deep cervical nodes. When there is an infection of the tonsil the most usual gland to enlarge (by name juglodigastic) lies behind the posterior belly of the digastic in an angle between the internal jugular and facial veins. If there is much enlargement, it projects in front of the anterior border of the sternomastoid muscle, where it is easily palpable, being one-half inch below, and somewhat internal, to the angle of the jaw. The lymphatics from the adenoid region drain into the

retropharyngeal glands, and an infection there causes an enlargement of these glands, which may give either pharyngeal, or tonsillar pain, earache, or other evidence of pharyngeal irritation. It is often difficult to differentiate the enlargements caused by tonsillar or adenoid infection, because usually both regions are involved.

To my mind adenoids in children is the most neglected thing that seriously affects childhood. By adenoids, I mean the collection of lymphatic tissue located in the vault of the pharynx. This pharyngeal tissue has been minutely described by the German anatomist, Luschka, and is sometimes called "Luschka's Bursa, or tonsil." The pharyngeal tonsil, or adenoid vegetation, becomes of interest and importance in its enlarged condition—(1) For the obstruction it offers to nasal breathing; (2) From the disturbance it may cause in the ear by pressure in the region of the eustachian tube, or orifice of opening, causing progressive deafness; (3) From the changes brought about in the irregular development of the alveola arches and the displacement of teeth; (4) From the causative relation it bears to various diseases in the nose, larynx, lungs and impoverished blood and cerebrospinal system.

The child who has adenoids in a marked degree presents a facial expression, which is in a measure pathognomonic. The little one goes about with its mouth open, more or less, with a dull countenance; the eyes are heavy and stupid; the external nose may be small; the upper lip thick and prominent; the palatal arch usually high, narrow and V-shaped; and the incisor teeth protruding forward. This picture we find varying from these symptoms in a small degree to those of extreme cases.

Nasal breathing through the day may be only slightly impeded, but at night the adenoids become congested as soon as the child assumes the recumbent position, and the little one is forced to sleep with its mouth open. In such cases we often find a peculiar quality of the voice in which there is a decided lack of resonance. The attacks of earache and impaired hearing, and occasional nose bleeding are common symptoms. Purulent discharge from the nostrils often causes excoriation and eczema of the upper lip. Hacking cough, asthmatic attacks, anuresis, "pigeon-breast," are a few of the results of oral breathing, 90 per cent of which is caused by adenoids. Likewise a large proportion of adult deafness is produced from the same cause. These cases are usually incurable. Had the adenoids been removed in childhood these deaf persons might be enjoying to the fullest the sense of hearing. Middle ear abscesses are nearly always caused by inflamed adenoids.

From a physiological standpoint the diffuse lymphoid tissue is found more or less in the stratum muscularis mucosa of all mucous membranes.

This normal lymphoid tissue is composed of reticulum of fibrous tissue, which contains lymph cells, blood vessels, lymphatic vessels and a few nerves. The lymphatic vessels are connected with the lymphatic circulation at the base of the brain above and with the tonsils, Walderer's Ring, and cervical chain below. The function of this diffuse lymphoid tissue is to prevent either the virus or the toxins entering these lymphatic vessels, and also it is claimed that these lymphoid cells throw off a secretion upon the surface of the mucous membranes, which has some germicidal action. LaFayette Page calls attention to intoxications arising from diseased conditions in the nose and pharynx. Schwalbe and Retizius have demonstrated the connection of the lymphatic vessels of the nasal mucous membranes and those of cranial cavity. They also state that the mental dullness in children is brought about by the lymphatic and venous statis of the nasal mucous membranes extending to those of the cranial cavity. It is now admitted by recent investigators to be more than probable that the virus of poliomyelitis, cerebrospinal meningitis, smallpox, scarlet fever and measles are taken up by the lymphatics of nasopharynx. It is reasonable to assume, knowing the above, that the children's nasopharynx should be kept in a normal physiological condition.

From a pathological standpoint Cryle has divided adenoid tissue into four varieties: (1) A soft, diffuse, friable mass composed mostly of lymphatic tissue and covered with a thin layer of epithelium; (2) Edematous, or cyanotic form in which the gland tissues are increased, the enlargement resulting from venous statis and edema. This feature is apt to occur in children affected by some intestinal derangement, or circulatory disturbance; (3) A hard variety in which there is increase, both of fibrous tissue and lymphatic elements; (4) A hard form which is caused by repeated attacks of acute or subacute inflammation, which bring on hypertrophy and later followed by contraction. This variety is usually secondary to intranasal disease.

The treatment of pharyngeal tonsils, of course, is surgical. The prognosis is good providing the condition is recognized early and the adenoids thoroughly removed. If allowed to remain with the hope of atrophy before or at the time of puberty, the associated derangements especially of the ear, arched palate and "pigeon breast" are hard to overcome.

By the removal of adenoids from a child it is often remarkable to see the results. The child who was cross and dull in school learns with the same intelligence perhaps as other children; his hearing improves; he is no longer a nervous, irritable individual, but often becomes one of the most obedient pupils that the instructor has. I have in mind at

present a child of eight, whose adenoids were removed three months ago, and only last week the mother reported to me that from an unmanageable one requiring frequent use of the switch her little girl has changed to an obedient child and was ever anxious to do something that would please her mother. Children who play "hookey" in school are often affected with adenoids, and of course, their removal is indicated.

In a personal examination of more than one thousand school children decayed teeth are nearly always associated with mouth-breathing, whether there is any relation between the two, I am not prepared to say.

Now just a word as to the results of mouth-breathing upon the child. The air is not filtered of its dust and bacteria in going through the mouth, and thus the child becomes more liable to infection. The air is also not moistened nearly so much passing through the mouth as by passing through the nose, consequently the mucous membranes of the trachea, bronchi and the alveoli of the lungs become dry thereby furnishing a fertile field for the growth of bacteria of different kinds that are found in the air. This dryness prevents, also, proper interchanges of gases to and from the blood and the result is an anemic condition, and this renders the child an easy victim of any of the infective diseases. This impoverished blood has a far-reaching effect upon the growth, both physical and mental, of the individual and of his usefulness and longevity in life.

CATARACT ACCIDENTS

J. G. Johnston, M.D., Charlotte

My only excuse for this short paper is, I might say, an inordinate interest in cataracts. If there is one particular thing in medicine in general, or in our specialty in particular that is interesting to me, it is a cataract. The idea came to me some time ago that if I could find out about the accidents which others have had in their cataract work, I would be better able to guard against them myself. Then why not make a start and probably I would get a great deal of this information in the discussion. As you will infer I have only mentioned in this a few cases in which there was something out of the ordinary. The good results have only been mentioned in one or two cases and then only to show something out of the ordinary or for purposes of comparison.

F. K., aged 48. When younger was a devoted worshiper at the shrine of Bacchus, and had some kind of spells; has never been definitely diagnosed what they were. Two years before I saw him he lost the sight of his right eye. When he came to me he had a fully developed cataract in the right eye.

and evidences of one beginning in the left. The prospects before him induced him to have the right eye operated on while he could see with the left. His kidneys were in good shape, and his blood pressure about 140, so it was thought favorable to operate. He was sent to the hospital and the eye prepared for operation. The classical operation was done with iridectomy, and everything looked extremely favorable. He was operated on on Monday and the eye did so well that he wanted to go home on Saturday. I persuaded him to stay until Monday, however, promising him that in case it was still doing well that I would let him go then. On Sunday the eye looked slightly red and watery, a condition brought about, he said, by his not having slept well the night before. On Monday there was more redness and some uneasiness in the eye. Tuesday there was a small spot of corneal opacity just above the pupil and about three m.m. from the corneal incision. This opacity became more marked and in a day or two a well marked abscess had developed in the substance of the cornea. This abscess was incised and cauterized and in a few days healed. The redness of the eye cleared and in due course of time the eye was well. The result was good except for the opacity at the site of the abscess. I have never been able to decide where the infection came from in this case. The lens of the left eye continued to become more and more opaque and after preliminary treatment was operated on with splendid results.

J. H. P., aged 79. He began to lose the sight of his right eye about a year before I saw him. Examination showed opacity of the lens of the right eye, with good light perception. There was beginning opacity of the lens of the left eye. The usual incision was made and the operation completed with no untoward indications. The eye was not dressed until 48 hours afterward, when it was found in good condition, anterior chamber reformed, pillars free, etc. About an hour after being dressed I was hurriedly called back to the hospital on account of his suffering severe pain in the eye. On removing the dressing I found the eyeball entirely filled with blood, and blood pouring from between the lids, which soon stopped under slight pressure. The next day I found a tough clot protruding from the eyeball between the lips of the wound. On attempting to remove this clot it was found to be firmly attached and seemed to extend to the bottom of the eyeball; in other words it seemed to completely fill the eyeball. On discovering that the clot could not be removed it was left alone for a few days, when the protruding part was cut off, after which the wound gradually healed. The eye continued red with occasional painful attacks, but not sufficient to convince him that it was best to do an enucleation. A few weeks later, though, he had an acute attack of pain which decided him and the eye was accordingly enucleated. Since that time he has had no trouble, and the other eye is still good.

Mrs. P., aged 50. Right eye had been operated on about two years ago. Had history of vomiting on almost all occasions, so when she came for operation the problem presented itself as to the best way to forestall the expected upset. In casting about for the best method we finally decided to make a conjunctival flap. After cocainizing the eye thoroughly a conjunctival flap was dissected up freely and sutures put in at outer and inner edges of cornea. These sutures were laid back out of the way and the usual cataract operation was made. After the operation was finished the conjunctival flap was drawn down and covered the corneal incision. The eye was dressed and the patient returned to bed. That afternoon the expected attack of vomiting occurred, and we watched the effect with fear and trembling. When it was considered

safe to open the eye, after two or three days, the dressing was removed, and to our intense gratification the eye was in fine shape. The conjunctival flap had held the corneal incision together, and the eye healed perfectly. She now has almost perfect vision with her correction, reading and sewing as she pleases.

M. M., col., aged 80. About a year ago she lost the sight of her right eye. At the time I saw her she had some opacity of the left. As she wanted the right eye operated on while she could see out of the left she was sent to the hospital and the right eye was prepared for operation. The success of the conjunctival flap in a former case led me to attempt the same thing this time, especially as I desired, on account of her age, to get her out of bed as soon as possible. The conjunctival dissection was made and the sutures put in as before, and the usual cataract operation was done. On attempting to bring down the conjunctival flap and tie the sutures my troubles began in earnest, as when I began to draw the flap down the patient began to squirm and to squeeze the eye, so much so that I had to desist in my efforts to tie the sutures. The result was a protrusion of vitreous and while there was no loss of vitreous to speak of the wound gaped rather widely and healed with a good deal of scar tissue. Some vision resulted, but not enough to be of much use.

P. R., aged 65. Lost vision in right eye a few months ago, but light perception was good. Vision in left eye fairly good. She was sent to the hospital and the eye prepared for operation. After thorough cocainization the usual incision was made, and everything proceeded nicely until the operation was finished except replacing the pillars of the iris and closing the eye, when she began to squeeze the eye shut, and in spite of all our persuasion and efforts she succeeded in expelling a good deal of vitreous. Finally the eye was closed and bandaged. It was not opened for 48 hours and then only just long enough to see that the lips of the wound were in apposition. Finding them nicely coapted the eye was closed again and rebandaged. It was not opened again until the sixth day, when it was found in good condition. The wound had healed nicely and she had very good vision. She was illiterate, and had sufficient vision to see how to do the ordinary household duties.

Mrs. M. E. S., aged 80. She had cataract in left eye for eight years. Lost sight in right eye a few months before I saw her. Her mind had been in bad condition for some time and as she was getting in the habit of imagining that she saw people and things after her, her sons thought that if she could be made to see out of one eye at least that she might improve with regard to her hallucinations. She was accordingly sent to the hospital and the eyes were cleansed and kept washed out for two or three days as a preparatory treatment. The left eye was chosen, as she had a small growth on the lid of the right that it was deemed best to let severely alone. After cocainization the eye was operated on as usual, after which it was bandaged, and the patient returned to her room with no mishap. We congratulated ourselves on our good fortune, especially as the next day everything was in fine shape. We are told, however, that "pride goeth before a fall" and so it happened in this case, as on the second night after the operation, while the nurse was temporarily out of her room she tore off the bandage, and on her return found the patient sitting up in bed with her fingers stuck in her eye as far as she could get them. Of course we had an infection and the eye was lost. I might

say, however, that we got the mental effect that her sons had hoped for, as she never complained of seeing things any more. Probably she had a faint memory of what she had gone through and feared to speak of them; who knows? Not daunted, however, by this failure there is a possibility of her having the other eye operated on, and we have already been endeavoring to plan a bandage or dressing of some kind that it would be impossible for her to pull off until we were ready to remove it.

DISCUSSION

Dr. K. M. Bonner, Raleigh: This paper reminds me of an old song which began thus: "We've all had 'em." I am interested in the failures of other men. A rehearsal of them is both instructive and consoling. Intraocular hemorrhage following cataract extraction, I have seen only once, but I have twice had a low grade infection of the cornea following extraction that continued until the entire cornea was white and vision hopelessly lost. These patients suffered no pain nor evidence of inflammation at any time, simply a progressive clouding of the cornea.

Dr. J. M. Lilly, Fayetteville: Some years ago I was consulted by two young people, nearly grown, a brother and sister, both of whom had bilateral congenital dislocation of lenses. Fair vision was obtained by proper lenses to be worn all the time. Recently the young lady came to me saying that a sudden change had taken place in her better eye and she could scarcely see with it. Examination revealed a lens passing through the pupil almost entirely in the anterior chamber. In a few weeks iridocyclitis of low grade developed and I advised operation. She consulted Dr. Woods in Baltimore, who removed the lens with happy results, giving her a better eye than before.

I have seen two cousins of these same patients, both small boys, with a similar bilateral dislocation which remain stationary.

THE DIAGNOSIS OF ACUTE MASTOIDITIS

H. M. Bonner, M.D., Raleigh

The classic symptoms of mastoiditis are pain, fever, tenderness on pressure over the mastoid—discharge from the ear, with certain fundus changes. In conjunction with these symtoms we may have edema with inflammatory thickening over the mastoid.

The diagnosis in a patient presenting these symptoms is easy, but

often many of these symptoms are absent, then is the difficulty. A patient having an ear discharge with no symptom other than edema and thickening over the mastoid as a rule has mastoiditis—yet the edema must be differentiated from post auricular adenitis, and fluctuation may mean nothing more than a broken down auricular gland.

On the other hand fluctuation may be due to a subperiosteal abscess—or to suppuration which has found its way from the middle ear between the periosteum and membrane lining of the posterior wall.

The subperiosteal abscess is more frequent in sclerotic mastoids and in children. The temperature course runs higher as a rule in children.

Pain in mastoiditis varies very greatly—usually worse at night, and while the pain is continuous the patient suffers frequent exacerbations.

The mastoid pain occurring during the first few days of an acute purulent mid-ear is not of serious significance, indicating only a pneumatic mastoid, disappearing shortly after a free myringotomy. If it does not abate within a few days we suspect a hemorrhagic mastoid—the cells at operation being found full of blood.

Pain on moving the auricle is not due to mastoid involvement but to furunculosis of the external canal, frequently.

Tenderness over the mastoid is due either to post auricular adenitis or mastoiditis. It is to be remembered that pain on pressure just below the tip may always be elicited even in healthy mastoids.

Pain varies in different patients. The aged and the diabetic suffer comparatively little pain, likewise do patients suffering specific or tubercular mastoiditis, also those in whom the infecting agent is the streptococcus capsulatus or Friedlander's bacillus.

Headache is not intense in mastoiditis. Should the headache become one-sided or intense we immediately suspect intracranial involvement.

Many patients have passed from an acute to a quiescent stage. They complain only of tinnitus and deafness, and on examination we find a slight discharge with a sagging post superior wall. Nothing more.

Dr. Hugh Blackwell reports a case in which the patient three weeks before had an acute purulent otitis media, of three days duration. The patient complained of insomnia, saying, that his head felt queer. Patient presented no other symptoms, insisting that he had suffered neither pain nor headache, yet an X-Ray examination demonstrated an operative mastoid. On operation the entire mastoid was found full of pus and granulations.

We may have mastoid with no fundus changes, usually specific or tubercular, the infection being conveyed by either the lymphatics or the blood stream, or the infection may have passed through the auditory

canal from the middle ear, such a swelling of the membrane then occurring in the antrum as to shut off the mid-ear entirely.

A patient who develops fever, during an acute purulent otitis, with no other cause to be found, raises a question mark as to his mastoid.

Pain in an ear that is discharging freely or pain behind the auricle in a discharging ear should arouse our suspicion.

The infecting organism should be determined in all cases with a discharging ear.

All questionable mastoids should be radiographed.

And I am convinced that many doubtful cases should have the benefit of what might be termed an "exploratory mastoid," the operation being in the hands of competent men a very safe procedure.

DISCUSSION

Dr. B. W. Fassett, Durham: The case which I wish to report was that of simple mastoid, left side, child six years of age. Patient did well, bright and cheerful, gained in flesh and mastoid filling in well. On the fifteenth day after operation patient not so well; pulse, 70; temperature normal, sleeping much, appetite poor. Dr. McPherson (who had had charge of patient to this time) was called from town, and I saw the case on the seventeenth day after operation. The child at this time was comatose; pulse, 60; temperature normal; both eyes turned to right, pupils partially dilated, nystagmus developed on turning eyes to left, no paralysis. Examination of fundus of eye showed beginning choked disc. The nasal half of nerve was swollen and inflamed, the temporal side remaining quite normal, a condition found only in the beginning of choked disc. The swelling commencing at top and bottom of nerve, closing in to the nasal side, the temporal half being last involved.

Diagnosis of cerebellar abscess was made. The child's parents were living away from town and their consent for operation was not obtained until the following morning. Under ether anesthesia the mastoid was opened and cleaned of granulating tissue in search for possible sinus pointing to the abscess. A small area of dura was exposed in the first operation. This was enlarged, removing roof of mastoid extending opening above ear. All dura exposed seemed normal in appearance, but bulged through the opening as though there was pressure behind it. Finding no evidence of pus here, the sinus was next exposed and found covered with granulations, the opening was extended back, dura covered with granulations, and at a point two inches from the external meatus a small opening was found in the dura, after uncovering freely the opening was stretched lightly and two ounces of foul pus escaped. The patient's

condition was immediately improved; pulse, respiration and color much better. A probe passed through opening in dura went two inches directly toward opposite side of head before meeting resistance, confirming previous diagnosis of cerebellar abscess. A small drain was left in two days. Child made a rapid and complete recovery.

Dr. H. M. Bonner, Raleigh: I think Dr. Davis misunderstands me. I was speaking of the fundus of the external canal—not the fundus of the eye.

By an exploratory mastoid, I do not mean at all an incomplete operation—but this, that rather than wait indefinitely in obscure cases with a bad outlook, it were safer to open the mastoid cells.

SPECIAL WAR SESSION

Maj. J. W. Long, Greensboro: No medical meeting in this day is complete without a war feature on the program, and this evening has been set aside for considering questions in relation to the war. This evening's meeting is not the only time that war matters have been or will be discussed. We had a most interesting war meeting over at the surgical section this afternoon, and we will have more war talk tomorrow.

I want to say to you something that I think you will be proud of, that is, that when the War Department apportioned the men that it wanted as medical officers among the States of the Union and sent out its first call for medical officers, North Carolina came forward and more than filled its quota at the first round. In fact, North Carolina, according to the testimony of Colonel Noble, furnished a greater percentage of her 2,100 doctors than any State south of the Mason and Dixon line, with the single exception of Florida. The truth of the matter is that North Carolina's percentage stood almost at the top of the list of any state in the Union except two classes of states, one like Florida and Nevada—Nevada has only 154 doctors, and it furnished 30, which made a large percentage—and states like Massachusetts, which had large hospitals that sent out early in the game the base hospital units, and Pennsylvania, which sent out two or three hospital units. With the exception of these states, North Carolina stood at the head of the list.

And remember that every doctor who has gone into the medical reserve corps, both in North Carolina and throughout the United States, is a volunteer; no man has been coerced, no man has been persuaded to go into this service; but the call has been made, and they have felt the stirrings of patriotism in their hearts and they have rallied to the colors in the defense of their country, of civilization and religion. Today we are facing a crisis that is bigger than the United States. We first started out from motives of patriotism. It is bigger than patriotism, because the very existence of civilization and the privilege of worshiping God under one's own fig tree in his own way is hanging in the balance. This is a world-wide question.

Now then, Dr. McBrayer, who is chairman of the Committee on Arrangements, has been interested in getting up a service flag, and this flag, I understand, has been made by the hands of Mrs. McBrayer and Mrs. McCain, Dr. McBrayer's daughter. As said of Dorcas, "We will speak of their handiwork with pride and with pleasure." At this hour

it is desired that Dr. McBrayer present this service flag, and he will do it in his own eloquent way. He needs no introduction to this audience.

PRESENTATION OF SERVICE FLAG

L. B. McBrayer, M.D., Sanatorium

From the day of Æsculapius until this day of opportunity the medical profession has been known of all men as the one profession that devotes itself without stint to the service of others. The medical profession is the one profession that lives that others may live, and when necessary as willingly dies that others may live. How like the Great Physician!

Knowing the altruism of the medical profession, even to sacrifice, it is no surprise that our Government in the present emergency should single us out as a class of men in this country that could be trusted to volunteer their services in numbers equal to the needs, and I am informed that only one state has furnished a larger percentage of its physicians than has North Carolina and the North Carolina Medical Society, and the three hundred and forty-five stars on that Service Flag tell the story in language that burns.

Our Government recognizes as no government in the history of the world has ever recognized the important part to be played by the medical profession in winning this war for liberty, that the world may be made safe for democracy. It at last realizes that a soldier killed by disease is as dead as if he were killed by German guns; that a soldier maimed by disease is as much disabled as if maimed to the same degree by the gas or liquid fire or bombs of the Huns; and when it is striving to its utmost to produce the greatest efficiency possible in its armies—the armies with the flag and the armies at home—it presents to our profession the greatest opportunity ever offered to a class of men, to prevent disease among our armies with the flag and to prevent disease among the armies who are left at home; to care for the maimed in our armies, whether caused by disease or bullets, and likewise for those who are left at home, and our profession responds as one man, in tones so voluble that they reverberate 'round and 'round this bleeding world of ours, and in accents almost sublime: "HERE AM I; SEND ME!"

It is, then, meet that those of us who are not privileged to join the colors and follow our flag "over there" should remember and do honor to those who are privileged to go, and the Service Flag is one of the emblems of this remembrance and this honor.

This Service Flag is presented to our Society by two women who know our profession and honor it and love it; for the one has a husband

and a son, and the other a husband and a father and a brother who belong to it. The threads that stitched the stars of blue on the background of pure white were beautiful threads of gold, but as tender and loving hands deftly placed the stars and stitched them there, the threads were found to be crimson; for the needle each time pricked the very heart and the thread each time was drawn through the very heart's blood of these two women; for near the beginning they stitched a star in place for a beloved first born and an elder brother.

But with love and devotion to our profession, and with loyalty and patriotism for our Government, like many a mother's tear that remains unshed, the crimson is kept beneath the surface.

Dear Service Flag in the window there,
Hung with a tear and a woman's prayer,
Child of Old Glory, born with a star,
Oh, what a precious flag you are!

On behalf of Mrs. L. B. McBrayer and Mrs. P. P. McCain, I present to the Medical Society of the State of North Carolina this, their Service Flag.

Maj. John W. Long, Greensboro: That flag should be for all time to come as sacred to the North Carolina Medical Society as was the Ark of the Covenant to the Israelites. When we meet again there will be some gold stars there, replacing some of the blue.

I think it fitting, ladies and gentlemen, that this flag be accepted upon the part of the Medical Society of North Carolina by one who is in the service, who has honored his country and his name by rallying to the colors. For more than a year he has been in the active service, leaving his mountain home, his family, his work, and his own private interest, that he might serve the country in its hour of need. I present to you Capt. J. Howell Way, of Camp Greene, who will accept the flag:

Maj. J. Howell Way, Waynesville: Major Long would have done me a great personal kindness, as well as prepared you for the worst yet to come, had he told you that I was an honored substitute, advised about fifteen minutes ago of that fact, a substitute to my friend, Major Laughinghouse, one of the most distinguished physicians and most talented orators in the profession of North Carolina, but the Major did not see fit to so advise you, and in the service I am precluded the privilege of talking back to him. Hence, I am deprived of the opportunity of having time and the services of a comely stenographer, like our good friend Dr. McBrayer has, to prepare you an address fitting the occasion and the audience. Naturally, I cannot refer to Æsculapius in beginning my remarks, but I can do better than that for a beginning. I can start with good Mrs. McBrayer.

Some years ago, when the State of North Carolina in its wisdom—for that Legislature was like all of our legislatures—wise in its deliberations as well as in its own purposeful conceit—when the Legislature in its wisdom turned the State tuberculosis sanatorium over to the State Board of Health, I made a hurried trip down there. The location was beautiful, it was natural, it was immature, it was undeveloped, and we looked about, my colleagues and I, for a man, for a definite, settled plan of action. We made some changes, we finally settled on Dr. McBrayer to come there and develop that institution and develop the work in North Carolina. We consulted him and we consulted the better part of the McBrayer house, Mrs. McBrayer. I have watched the evolution and growth of the sanitarium. Yesterday afternoon it was my privilege and my pleasure to visit the institution for the first time in more than a year. It is not like any state institution in this state or any other state it has been my privilege to visit. I would not have known it was a state institution. It seemed to me just like a great big home, and if you had been away from your home about a year you would know the wealth of meaning in that sweet word. It impressed me as being a great big home, filled with more or less invalid people, with comfort and interest manifested on every point, with the reflex of the kindliest character and treatment shown in every face, and hovering over all the broad mantle of tender, human sympathy. I ran all over the place. I even went into the McBrayer house. I saw the pictures on the wall. I know where the clock is sitting. I took in all the details, and the thought that was uppermost in my mind was "We made no mistake in getting the McBrayers here." And I was thinking more. I thought in the future years when I get back home and this war is ended, and the women of North Carolina have come into their just rights as equal citizens with you, sir, and me, and some one writes a biographical history of men of America, a companion volume to *Men of Mark in North Carolina,* and calls it *Women Who Have Helped North Carolina,* I trust the likeness of that good woman and a word portrait painted with kindly touch will portray the genuine, sterling integrity of character, sincerity and earnestness of purpose, and the kindly housewife and motherly traits of that good woman, Mrs. McBrayer. It will be done.

There was a time in the history of North Carolina when we made history and we did not write it, but North Carolina has gotten beyond that. We have seen other states write history in which they received tributes of merit that belonged to Carolina people. We are thoroughly awake, and our history will be written by our own people.

God bless the noble inspiration of Mrs. McBrayer and her daughter,

Mrs. McCain, that impelled them to make and to have here this evening that beautiful flag.

You know I declined a few minutes ago to accept this flag when a civilian gentleman asked me to do so, and later when Major Long spoke to me about it, I looked at the insignia of rank on his collar and said, "Certainly, sir, I will do it." That is the training, friends, the army life is going to bring to five million, maybe more millions than that of men, before the world is made safe for humanity.

You know, I don't look on this war as a great scourge to this Nation. I look on it as a benediction, as a blessing, a sacrifice of untold joy and beauty and benefit to this Nation of ours and its people.

Now I am just talking in a rambling sort of way, praying every moment somebody will say, "Time is up." I am just talking in a friendly, conversational sort of way of what comes into my mind as I ramble.

This Medical Reserve, this little body of 345 members of my profession, for which the flag waves, who have signified their willingness to go, to sacrifice all, to put themselves in the attitude of being called and ordered and sent, men who are accustomed in their communities to be directors of things, placing themselves in the position to know what the strong hand of discipline is, it is a great purpose, a great experience for them.

Suppose I tell you in just a moment in a spirit of friendly intimacy how I came in. I made my application for membership in the Medical Reserve. It lay on my desk; I did not sign it. It has been years since I sat in my office and just thought about something, as I did that day. I am usually writing or reading, or talking to somebody, or busy. I read that application again that afternoon after I had filled it out. I read it again that night, and late at night I signed it. I shut my office door and went in the house, and it seemed to me that when I stepped on the porch I was going into my house with a feeling that I never had when I entered my home before. It was not that I did not feel at home, but I felt like I was gone. I wasn't certain whether it was my home or not. I could not quite understand myself, and you know how dry North Carolina is now—that was just a little over a year ago. I know I was all right and straight! I went up to my bedroom, tapped gently on the door. My wife was asleep. I turned the light on. She did not awaken. I looked at her face, wondered why she didn't wake; I felt so lonesome; I wished she would wake. I walked out on my sleeping porch and I looked out on those beautiful and blessed Carolina mountains of ours. The moon was shining. I looked at my wife's face again as I came back into the room; wished she would wake, but she did not. I never

felt as lonesome in my life before, or since, as I did that night. She didn't wake. I went to bed. I realized that I was about to take what I felt, since the day of my marriage, was the most important step of my life. Friends, that is the way I felt about going into the army. That is the way I have felt about it ever since, and yet it was a privilege.

The world had been good to me. The profession of this State had kindly given me all of its choicest honors that were all appreciated so much. My friends had been good to me. I had an attractive home, a loving wife, and my children were around me and my sweet little granddaughter was just learning to talk. Did any man have any reason to leave his home less than I except impelled, dominated, overwhelmed with this spirit, *my country calls me, America needs me; it is my duty to go,* and I went. What the future may have in store for me in this war, where I may go, whither I may be sent, I know not. None of us in the army know. We do not study about that. Our only thought is to do our duty the very best we can.

Ladies and gentlemen, I am free to say to you that that spirit of self-effacement, that spirit of service to the country, that patriotic impulse to listen to the call of the Nation, was the animating desire of the men whom those stars stand for there. God bless them each and every one. God bless you, my friends. God bless dear old North Carolina, her native sons, her sweet daughters. God bless us all. May each one of us rise up and put forth to the utmost limit of our strength every thought, every desire, every purpose, every energy for power that is within our very souls, to never cease every effort in our capacity until the power of Germany is forever broken and the dominant influence of American democracy reigns triumphant throughout the earth, the glorious handmaiden of, and second only to the religion of the Lord Jesus Christ.

On behalf of the Medical Society of North Carolina I accept this beautiful flag, and promise you the lustre of its many stars, along with that of those yet to be added, shall not be dimmed by the acts of the noble medical gentlemen represented.

Dr. Cyrus Thompson, Jacksonville: I think that the proper care of the flag would be the hands of the makers of it in order that, as there are other stars to be added, Mrs. McBrayer and Mrs. McCain may add them. I, therefore, move that this flag be committed by this Society to the care of Mrs. McBrayer and Mrs. McCain as custodians of it for this Society.

Motion seconded by Dr. D. E. Sevier. Carried unanimously.

NORTH CAROLINA DOCTORS WITH THE COLORS APRIL 1, 1918

ALAMANCE COUNTY

A. Lacy Morrow--------Swepsonville
P. R. Brown----------Swepsonville
J. J. Barefoot----------Graham
R. S. Vass (colored)------Burlington
C. T. Vernon----------Burlington

ALEXANDER COUNTY

(None)

ALLEGHANY COUNTY

(None)

ANSON COUNTY

Chas. I. Allen----------Wadesboro
J M. Covington----------Wadesboro
J. M. Davis----------Wadesboro

ASHE COUNTY

(None)

AVERY COUNTY

(None)

BEAUFORT COUNTY

A K. Tayloe----------Aurora

BERTIE COUNTY

E. W. Pugh----------Windsor
H. C. Willis----------Merry Hill

BLADEN COUNTY

D. D. Clark----------Clarkton
A. B. Holmes----------Council

BRUNSWICK COUNTY

J. Arthur Dosher----------Southport

BUNCOMBE COUNTY

Grady M. Morgan-------Morgan Hill
L. M. Griffith----------Asheville
L. W. Beall----------Asheville
Bernice Morgan---------Morgan Hill
E. R. Cocke----------Asheville
Frank J. Clemmenger-------Asheville
M. H. Fletcher----------Asheville
J. B. Greene----------Asheville
E. V. Harbeck----------Weaverville
W. P. Herbert----------Asheville
J. S. Hopkins--------Black Mountain
C. S. Jordan----------Asheville
Ben Merriweather----------Asheville
A. T. Pritchard----------Asheville
Wm. H. Scruggs-----Black Mountain
G. S. Tennent----------Asheville
Thompson Fraser----------Asheville

BURKE COUNTY

J. W. Vernon----------Morganton

CABARRUS COUNTY

J. A. Hartsell----------Concord
S. E. Buchanan----------Concord
R. E. Watts.

CALDWELL COUNTY

G. S. Sturgis----------Lenoir
J. Claude Moore----------Mortimer
C. L. Wilson----------Lenoir

CAMDEN COUNTY

(None)

CARTERET COUNTY

(None)

CASWELL COUNTY

(None)

CATAWBA COUNTY

Frank H. Foard------Hickory, R.F.D.
Lock McCorkle----------Newton
Gaither Hawn----------Hickory
F. S. Steele----------Hickory
J. H. Shufford---------West Hickory
P. J. Klutz----------Maiden
Fred B. Foard-------Hickory, R.F.D.
Glen Long----------Catawba
(Honorably discharged)

CHATHAM COUNTY

Frank Wrenn----------Siler City

CHEROKEE COUNTY

Sam B. Patton----------Patrick
C. V. Orr----------Andrews
N. B. Adams----------Murphy

CHOWAN COUNTY

Robert B. Drane----------Edenton

CLAY COUNTY

(None)

CLEVELAND COUNTY

Thos. B. Gold----------Lawndale

COLUMBUS COUNTY

J. M. Harper----------Whiteville
L. D. Floyd----------Cerro Gordo
H. B. Maxwell----------Whiteville
R. B. Whitaker----------Whiteville
H. F. Munt----------Boardman

CRAVEN COUNTY

Dr. Lupton ----------New Bern
Dr. Howard----------New Bern
R. D. V. Jones----------New Bern
Raymond Pollock----------New Bern

CUMBERLAND COUNTY

Junius Vann----------Fayetteville
W. C. Melchor----------Fayetteville

CURRITUCK COUNTY

(None)

DARE COUNTY

(None)

DAVIDSON COUNTY

C. M. Griffith----------Thomasville

DAVIE COUNTY

(None)

DUPLIN COUNTY

J. W. Farrior----------Kenansville
Dr. Robinson----------Wallace

DURHAM COUNTY

B. U. Brooks----------West Durham
Joseph Speed----------Durham
C. H. Shepherd (col.)-------Durham
Chas. A. Woodard----------Durham

EDGECOMBE COUNTY

J. G. Raby----------Tarboro
R. H. Royster----------Tarboro
J. H. Gutchin----------Whitakers
Geo. Mitchell----------Macclesfield
Wm. W. Green----------Tarboro

FORSYTH COUNTY

Lee R. Salmons-------Winston-Salem
T. M. Chaney---------Winston-Salem
S. D. Craig----------Winston-Salem
Wortham Wyatt------Winston-Salem
John Thames---------Winston-Salem
C. S. Lawrence-------Winston-Salem
E. L. Lockett---------Winston-Salem

FRANKLIN COUNTY

A. R. Winston----------Franklinton
H. A. Newell----------Louisburg
Claude Timberlake-------Youngsville
J B. Davis (col.)----------Louisburg
M. C. King----------Franklinton

GASTON COUNTY

W. B. Hunter----------Gastonia
C. E. McLean----------Belmont
J. A. Dimmett----------Gastonia
Dr. Moore----------Mt. Holly
Geo. R. Patrick-----Lowell, R.F.D. 2
Rowland Clinton----------Gastonia
H. M. Pressley----------Belmont

GATES COUNTY

H. C. Brooks----------Sunbury

GRAHAM COUNTY

(None)

GRANVILLE COUNTY

R. T. Uhls------Franklinton, R.F.D.
W. N. Thomas----------Oxford
W. J. Booker (col.)----------Oxford

GREENE COUNTY

(None)

GUILFORD COUNTY

N. G. Wilson----------Summerfield
Walter F. Cole----------Greensboro
F. J. Pate----------Greensboro
H. H. Ogburn----------Greensboro
Julian G. Thomas--------Greensboro
H. F. Stokes----------Greensboro
Wm. G. McAnnally--------High Point
Dr. Thomas----------Greensboro
Dr. Wolf----------Greensboro
Casper Jennings---------Greensboro
T. M. Stanton----------High Point
F. R. Taylor----------High Point
E. C. Arby----------Greensboro
H. F. Starr----------Greensboro
A. S. Oliver----------Greensboro
Anna M. Gove----------Greensboro
C. W. Banner----------Greensboro
Joseph H. Boyles--------Greensboro
W. H. Braddy----------Greensboro
Ralph E. Dees----------Greensboro
John T. Burrus----------High Point

HALIFAX COUNTY

R. P. Beckwith----------Rosemary
K. Leggett----------Hobgood
Dan Patchin--------Roanoke Rapids
A. D. Morgan---------Scotland Neck
T. C. Tinsley---------Scotland Neck

HARNETT COUNTY

J. S. Thompson----------Dunn
L. J. Arnold----------Lillington
F. R. Ruff----------Duke
Geo. L. Fuquay----------Coates

HAYWOOD COUNTY

J. Howell Way---------Waynesville
J. F. Abel----------Waynesville
F. M. Davis----------Canton
Wm. G. Frances--------Waynesville

HENDERSON COUNTY

B. F. Cliff----------East Flat Rock

HERTFORD COUNTY

(None)

HOKE COUNTY

S. W. Thompson--------Sanatorium
Reuben A. McBrayer----Sanatorium

HYDE COUNTY

T. A. Mann----------Fairfield

IREDELL COUNTY

C. L. Sherrill----------Statesville
W. D. McClelland--------Mooresville
A. King----------Mooresville
J. H. McLelland----------Statesville
James M. Davis----------Statesville
Robert B. Hill----------Statesville
Fred W. Rankin---------Mooresville
P. J. Chester----------Mooresville
A. Campbell----------Statesville

JACKSON COUNTY

C. Z. Candler----------Dillsboro
Edmond J. Bryson---------Cullowhee
Grover C. Wilkes----------Sylva

JOHNSTON COUNTY

Thel Hooks----------Smithfield
I. W. Mayerburg----------Selma
W. E. Wilmerding---Selma, R.F.D. 1
G. B. Woodard----------Kenly
G. S. Coleman----------Kenly

JONES COUNTY

Colin Shaw----------Maysville

LEE COUNTY

Evander McIver----------Jonesboro
C. L. Scott----------Sanford

LENOIR COUNTY

Vance Perry----------Kinston
Marcer C. Parrott----------Kinston

LINCOLN COUNTY

(None)

McDOWELL COUNTY

D. M. McIntosh_____Old Fort
Clay McColl_____Marion

MACON COUNTY

S. H. Lyle_____Franklin

MADISON COUNTY

Oliver L. Stringfield, Ft. Stevens, Ore.

MARTIN COUNTY

W. H. House_____Oak City
R. M. Buie____Williamston, R.F.D. 5

MECKLENBURG COUNTY

J. K. Ross_____Charlotte
John Donnelly_____Charlotte
Addison G. Brenizer_____Charlotte
John W. McConnell_____Davidson
H. W. McKay_____Charlotte
Baxter Hunter_____Charlotte
R. A. Moore_____Charlotte
Wm. Belk_____Charlotte
D. R. Austin_____Charlotte
J. P. Mathewson_____Charlotte
R. F. Leinback_____Charlotte
L. M. Fetner_____Charlotte
J. W. Squires_____Charlotte
W. L. Orr_____Matthews
William Allen_____Charlotte
M. C. Houser_____Charlotte
L. W. Hovis_____Charlotte
Meyer Hunter_____Charlotte
M. L. Townsend_____Charlotte
Joe H. Caldwell_____Charlotte
Wm. E. Wishart_____Charlotte
J. W. Young_____Charlotte
J. A. Bangle_____Charlotte

MITCHELL COUNTY

(None)

MONTGOMERY COUNTY

C. W. Armstrong_____Troy

MOORE COUNTY

Chas. T. Grier_____Carthage

NASH COUNTY

J. A. Winstead_____Nashville
M. R. Freeman_____Bailey
G. C. Godwin_____Nashville
W. Deans_____Battleboro

NEW HANOVER COUNTY

H. A. Coddington_____Wilmington
W. T. Ruark_____Wilmington
Tate Moore _____Wilmington
G. H. Croom_____Wilmington
Wm. Blair Hunter_____Wilmington
Dr. Bangle _____Wilmington
D. W. Green_____Wilmington
Jos. W. Hooper_____Wilmington
A. H. Harriss_____Wilmington
Ernest S. Bullock_____Wilmington
Egbert T. Scott (col.)____Wilmington
C. L. Pridgen_____Wilmington
J. F. Robertson_____Wilmington

NORTHAMPTON COUNTY

W. R. Parker_____Woodland, R.F.D.
C. P. Parker_____Garysburg
Paul G. Parker_____Potecasi

ONSLOW COUNTY

R. L. Daniels_____Swansboro
R. H. Noell_____Swansboro

ORANGE COUNTY

L. H. Webb_____Chapel Hill
R. B. Hayes_____Hillsboro
E. A. Abernethy_____Chapel Hill

PAMLICO COUNTY

(None)

PASQUOTANK COUNTY

Joe L. McCabe_____Elizabeth City
R. B. Weeks_____Weeksville

PENDER COUNTY

(None)

PERQUIMANS COUNTY

T. S. McMullan_____Hertford
R. B. Benthall_____Murfreesboro
Clayton Eley _____Woodland

PERSON COUNTY

B. A. Thaxton----------Roxboro
S. S. Montague----------Roxboro

PITT COUNTY

J. C. Greene----------Greenville
Carl Pace ----------Greenville
Dr. Carr ----------Farmville
M. T. Edgerton----------Greenville
C. Jasper Ellen----------Greenville
Cecil Garrenton ----------Bethel
H. P. Moseley----------Farmville
Chas. O'H. Laughinghouse-Greenville

POLK COUNTY

W. W. Gray----------Tryon
Marion C. Palmer----------Tryon

RANDOLPH COUNTY

J. F. Miller----------Ashboro

RICHMOND COUNTY

William Moncure ----------Hamlet
F. B. Garrett----------Rockingham

ROBESON COUNTY

N. H. Andrews----------Rowland
Russell Beam ----------Lumberton
Lawrence B. Kirkpatrick----Maxton
C. S. Fisher (col.)----------Maxton
Wm. P. McKay---------Red Springs

ROCKINGHAM COUNTY

M. B. Abernethy----------Reidsville
Harvey Robertson---------Reidsville
S. W. Hurdle----------Spray
J. K. Stockard----------Reidsville

ROWAN COUNTY

H. T. Trantham----------Salisbury
C. M. Van Poole----------Salisbury
J. H. Razzelle----------Salisbury
G. W. Choate----------Rockwell

RUTHERFORD COUNTY

Wm. Ernest Brackett-------Caroleen
F. W. H. Logan-------Rutherfordton
Henry Norris --------Rutherfordton
J. Rush Shull----------Cliffside

SAMPSON COUNTY

E. R. Hardin----------Clinton
Druce F. Butler----------Clinton
John D. Kerr----------Ingold
David Sloan ----------Ingold
Wm. Sloan ----------Ingold
H. C. Turlington----------Clinton

SCOTLAND COUNTY

N. B. Kannedy----------Laurinburg
N. T. Canady----------Laurinburg
Fairley James ----------Laurinburg

STANLY COUNTY

T. A. Hathcock----------Norwood
J. N. Anderson----------Albemarle
L. F. McGruder----------Albemarle
L. V. Dunlap----------Albemarle
F. C. Shugart----------
W. T. Ranier ----------

STOKES COUNTY

Beverly Jones ----------Walnut Cove
Dr. Bernard ----------Pinnacle

SURRY COUNTY

Geo. W. Evans----------Stony Knoll
A. F. Jones ----------Ararat

SWAIN COUNTY

Ed. J. Bryson----------Fontana

TRANSYLVANIA COUNTY

Hall Lyday ----------Brevard
Virgil Osborne ----------Brevard
A. E. Lyday----------Penrose
Thomas Summey ----------Brevard

TYRRELL COUNTY

(None)

UNION COUNTY

R. L. Payne ----------Monroe
R. J. Lanville ----------Wingate
L. E. Guin----------Waxhaw

VANCE COUNTY

D. C. Absher----------Henderson
B. G. Allen----------Henderson

W. H. Bryant (col.)------Henderson
L. C. McIntosh----------Henderson
Earl Watkins----------Henderson
J. M. Huff------Henderson, R.F.D. 4
Jas. Royster ----------Townsville
Thomas Royster --------Townsville
F. O. Swindell----------Kittrell
N. H. Crews----------Henderson
Edwin F. Fenner---------Henderson

WAKE COUNTY

C. W. Bell----------Raleigh
H. G. Turner----------Raleigh
Louis N. West----------Raleigh
T. E. Wilkerson----------Raleigh
R. S. Stevens----------Raleigh
A. S. Pendleton----------Raleigh
John B. Powers, Sr.----Wake Forest
John McKee ----------Raleigh
R. S. McGeachey----------Raleigh
John Ray ----------Raleigh
Alfred Mordecai ----------Raleigh
H. A. Thompson----------Raleigh
A. C. Campbell----------Raleigh
J. L. Moore----------Wendell
R. P. Noble----------Raleigh
W. T. Carstarphen-----Wake Forest
Ivan M. Procter----------Raleigh

WARREN COUNTY

(None)

WASHINGTON COUNTY

(None)

WATAUGA COUNTY

(None)

WAYNE COUNTY

G. B. Morris----------Mt. Olive
H. M. Person----------Saulston
R. W. Spicer----------Goldsboro
Marshall Hood ----------
P. C. Carter----------Goldsboro

WILKES COUNTY

M. L. Townsend------N. Wilkesboro
Wm. A. Trivett----------Osbornville

WILSON COUNTY

M. M. Saliba----------Wilson
Chas. L. Swindell----------Wilson

YADKIN COUNTY

J. T. Benbow----------East Bend

YANCEY COUNTY

(None)

COUNTY NOT KNOWN

Jasper V. Howard
Harry L. Brockman
John M. Huff
John C. Taylor
Ernest W. Larkin
Chas. S. Norburn
Brockton R. Lyon
Wm. F. McAnnally
O. C. Foote
J C. Brantley
Louis H. Williams
Odren D. King
Jas. M. Howard
Thos. L. Morrow
Cola Costello
Memory F. Boyles
Marshall H. Hook
Wm. F. Crone
Paul W. Best
Robert C. Sample
Clifton F. West
Russell M. Cox
John W. Gainey
E. B. Whitehurst

DOCTORS WHO SERVED ON THE MEXICAN BORDER

In endeavoring to give recognition to the patriotism and sacrifices of the members of our profession in North Carolina, it is considered meet and proper that those who served in our army on the border during the late argument with Mexico should not be forgotten. We, therefore, are pleased to present here the

OFFICERS OF THE MEDICAL DEPARTMENT, NORTH CAROLINA NATIONAL GUARD, WHO SERVED ON THE MEXICAN BORDER IN 1916

Abram R. Winston	Major
Francis J. Clemenger	Major
Baxter R. Hunter	Major
Henry Norris	Major
M. B. Abernathy	Captain
W. C. Horton	Captain
H. A. Newell	Captain
Armistead K. Tayloe	Captain
Reuben A. Campbell	Captain
Thomas F. Reynolds	Captain
Edwin F. Fenner	Captain
Francis M. Davis	First Lieutenant
Richard Spicer	First Lieutenant
Houston B. Hiatt	First Lieutenant
John E. Ray	First Lieutenant
Ben M. Meriwether	First Lieutenant
William B. Hunter	First Lieutenant
Thomas P. Burrus	First Lieutenant
Sidney E. Buchanan	First Lieutenant
Reuben A. McBrayer	First Lieutenant
David B. Sloan	First Lieutenant

STATE COMMITTEE OF NATIONAL DEFENSE

MEDICAL SECTION

In mobilizing the resources of our country for war, perhaps the most important single thing to take into consideration by our Government, and so recognized by it, was the health of the soldier; the prevention of disease and injury, and when occurring, the curing and returning to active duty as early as possible of the diseased and injured found

among the soldiers. In casting about for the best machinery to mobilize the medical profession in the United States the National Council of Defense, presided over by that splendid physician and patriot, Dr. Franklin H. Martin, it was decided as a part of the machinery to organize in each state a State Committee of National Defense, Medical Section, which would have in charge and be responsible for the furnishing of the State's quota of medical men to the service. It is a pleasure to present below the roster of this Committee for North Carolina. Too much cannot be said in commendation of the splendid service in the capacity of the chairman, Dr. John Wesley Long, of Greensboro, N. C., and also Dr. Watson S. Rankin, Vice Chairman, Raleigh, N. C.

59 Chairman—Long, John Wesley	119 Church St., Greensboro.
39 Vice-Chm.—Rankin, Watson S.	Secretary State Board of Health, 507 N. Blount St., Raleigh.
61 Baker, J. M.	Tarboro.
48 Biggs, Capt. M. H.	Rutherfordton.
Beall, W. P.	363 Benbow Arcade, Greensboro.
40 Brawley, R. V.	Salisbury.
Crowell, A. J.	Realty Bldg., Charlotte.
Duffy, R. N.	New Bern.
65 Faison, I. W.	Charlotte.
*60 Fletcher, Maj. M. H.	Asheville.
52 Gibbon, Capt. R. L.	Independence Bldg., Charlotte.
*48 Hays, Capt. Benj. K.	Sec. State Med. Assn., Oxford.
Highsmith, J. F.	Fayetteville.
*47 Laughinghouse, Maj. Chas. O'H.	Greenville.
57 Lyle, Lieut. S. H.	Franklin.
42 Lynch, Jas. M.	Medical Bldg., Asheville.
49 McBrayer, L. B.	Sanatorium.
44 Parrott, J. M.	Kinston.
47 Royster, Hubert A.	Sec. State Bd. Exam., 423 Fayetteville St., Raleigh.
54 Stevens, M. L.	113 W. Chestnut St., Asheville.
50 Stokes, Capt. Jas. E.	Salisbury.
Newman, Surgeon W. A.	Ft. Caswell.
54 Tayloe, D. T.	Washington.
Thompson, Cyrus	President Medical Society of the State of N. C., Jacksonville, N. C.
40 Wood, E. J.	201 Chestnut St., Wilmington.

*Now in active service.

In continuing the organization of the medical resources of our country along with all other resources, our Government, through the National Council of Defense, decided that it was necessary to organize the doctors of each state who were not eligible for service in the Medical Corps according to the rules laid down by the Surgeon General and approved by the Secretary of War. To the end that this organization might be

completed in North Carolina, on recommendation of Dr. John Wesley Long, Chairman of the State Committee of National Defense, North Carolina Medical Section, the following men were appointed to perfect this organization, and they consitute the

EXECUTIVE COMMITTEE OF THE VOLUNTEER MEDICAL SERVICE CORPS FOR NORTH CAROLINA

L. B. McBrayer, Chairman ---------- Sanatorium.
Cyrus Thompson, President
State Medical Society ---------- Jacksonville.
M. L. Stevens ---------- Asheville.
A. J. Crowell ---------- Charlotte.
W. P. Beall ---------- Greensboro.

The following telegram was received from Hon. T. W. Bickett, and was read by Major Long:

RALEIGH, N. C., April 16, 1918.

MAJOR JOHN WESLEY LONG, M.D.,
Pinehurst, N. C.

Please express to the doctors my deep regret that vocal chords that positively refuse to work make it impossible for me to speak to them tonight. Our North Carolina doctors have with the spirit of self-effacement that is the birthmark of their calling answered the call of the Nation. Dangers and difficulties have only served to stimulate them to supreme effort. Their record compares most favorably with that of any state in the Union, both with respect to the number of men who have enlisted and the character of work they are doing. This record will live in history as an enduring monument of our doctors' passion for high service. Permit me to add that the doctors who stay at home are doing work no less useful and no less heroic than those who are going to the front. Daily they do battle with the unseen forces of death, in quiet homes and in remote places, knowing that victory and defeat will alike go unheralded. They encounter dangers as real and as numerous as their brothers who give first aid to the wounded who stagger back from No Man's Land. These men at home have rendered indispensable service on local exemption boards and medical advisory boards. This is hard, unpopular work and the only reward in sight is to be misrepresented and misunderstood. To the doctors who are going to the firing line and to those who are keeping the home fires burning I wish to register the gratitude of this dear old Commonwealth.

One thing more I desire to say: The doctor is a vital force in molding public opinion. The people love and trust their doctor more than they do any other man, except their pastor. It follows that the doctors have a wonderful opportunity to make plain to the families they visit the supreme necessity for and the everlasting righteousness of this war. Please carry into every home the solemn truth that while the war is going to cost much and entail infinite pain, yet, like the surgeon's knife, it is an instrument of mercy and salvation, and that the only cure for the cancer of autocracy that is eating its way into the heart of the world is to cut it out. T. W. BICKETT, *Governor.*

It was moved that Maj. J. W. Long reply to the telegram from Governor Bickett. The motion was seconded and carried.

The following reply was sent by Major Long to Governor Bickett:

GREENSBORO, N. C., April 19, 1918.

GOVERNOR THOMAS W. BICKETT, *Raleigh, N. C.*

MY DEAR GOVERNOR:—It was with much sorrow that we received your telegram stating that you could not be with us at the Pinehurst meeting of the North Carolina Medical Society and make the patriotic address which we expected of you.

We were also distressed to learn that you were physically disqualified to make the address by reason of the condition of your vocal chords.

Could you have heard the generous applause which the audience gave when I read your splendid patriotic message to them you would have realized something of what the profession in North Carolina feels toward you.

Trusting that you are rapidly recovering the use of your voice, which has always been raised in the interest of truth, justice, and patriotism, I beg to remain. Sincerely yours,

J. W. LONG.

The following resolution was introduced by Dr. H. A. Royster:

Resolved, by the Medical Society of the State of North Carolina in annual meeting assembled, That we give our unqualified endorsement to U. S. Senate Bill 3748, known as the Owen Bill, giving increased rank to members of the medical corps and medical reserve corps of the Army on the same basis as already obtains in the Navy. This increased rank is a necessity in order that the Medical Corps and Medical Reserve Corps of the United States Army shall be enabled to efficiently perform their service.

Resolved, further, That a copy of this resolution be sent to our Senators and Representatives in Congress and that they be earnestly urged to support the measure and to vote for it.

(Rider on appropriation bill since increasing numbers in higher ranks.)

Motion by Dr. J. P. Munroe that resolutions proposed by Dr. H. A. Royster be adopted; motion seconded; carried.

MAJ. JOHN W. LONG: I want to say we have a very distinguished army officer with us this evening, and he knows more about the necessity of a bill of this kind and the reasons for its being introduced, and why the passage of the bill will further not only the interests of the profession, but the success of the war, than perhaps any other man. I am going to call on him to explain to us in his own way something about this bill. I have the pleasure of introducing to you Col. W. O. Owen, of the United States Army.

THE OWEN BILL EXPLAINED

Col. W. O. Owen, Washington, D. C.

This bill of which they have asked me to speak has been written and rewritten many, many times. It has been written, I guess, in at least a dozen different forms and has been introduced at least that number. The present condition is that the army has one major general in the regular service, and three brigadier generals in the National Army. The Navy has a ratio in its organizations. The ratio is important because each time the Army goes up or down you have to go to Congress; without the ratio you have too many or too few. The Navy Bill—I may not give you the exact verbiage, but I can give the substance—the Naval Appropriation Bill was enacted August 29, 1916. . The section of the personnel which deals with the Medical Department gives the Medical Department a composition of—I will not give you the naval ranks; I will give you the army equivalent: one-half one per cent major general, but did not provide brigadier general for the reason there is no corresponding grade in the Navy, the grade of commodore having been abolished. One-half received the pay of brigadier, the other half major general. In the corresponding grade of colonel there are four per cent. Of the grade corresponding to lieutenant colonel the Navy have eight per cent.

The individual medical officer has in the line of the Navy a line officer, who is called the running mate of this medical officer, and the law prevents the medical officer from being promoted before the time arrives at which his line brother may be promoted. The consequence was that instead of expressing the lower grades in various percentages, which we desired, they were summed up as a total of 87½ per cent.

The first time the Owen Bill was written it contained these ratios expressed differently, one-fourth of one per cent were to be major generals, one-fourth of one per cent brigadier generals, four per cent colonels, eight per cent lieutenant colonels, twenty-three and one-half per cent majors, and the other divided into equal parts between the other two grades of lieutenant and captain, or thirty-two per cent each. The real reason why men should be graded in the Medical Department is that a man's intelligence in an army has to be judged by the line officer before he has had time to have experience with the medical officer and to know the personal qualities and qualifications of the man. He therefore is compelled to judge this man by the insignia of intelligence and length of service which he sees upon his uniform. The officers of the line are compelled for this reason to judge men by the stamp of approval which

has been placed upon them by the President and the Senate of the United States, and if a man be marked on his shoulder with the badge of youth and inexperience when he goes before the general officer whose medical adviser he happens to be, the general looks at him and at his collar, sees that he is a medical officer, at his shoulder and sees youth and inexperience on the man who has just joined, and he looks at the face and the head, and he sees the face of an elderly man with gray hair, and he says, "What is this? This is the face of intelligence. What is he doing with the grade of a first lieutenant on his shoulder? He cannot be worth much or the Government would not have marked him in this way."

The Medical Reserve officers in the armies of the United States at present amount to more than 15,000, and I think less than 800 of the Medical Corps, of whom I generally speak of as "we" because I am one of them. When this war commenced there were about 444 of us, and that included all of our youngsters, men with less than three or four or five years of service and quite a number of them.

Now, the highest grade that any of you gentlemen can get in the Medical Reserve Corps is that of a major. That does not appear to me to be quite a fair thing for you. The burden of the work falls on you, the burden of the responsibility falls on you. It is true enough we take all the heavier part of administration work, but there is a world of it to fall on you. Certainly the laborer is worthy of his hire; it does indeed seem that some such proposition as that which is advanced in this so-called Owen Bill ought to become law, and that you ought to have a better grading than you have. I, for one, would most gladly see you get it. I feel that I have a right to say to you that it has been nearly a year now that I have fought this battle by the side of my own chieftain almost alone, and I certainly hope to see you gentlemen take up your own battle, determined to have that which you need in order that you may be able to render efficient service.

I hardly feel free to talk as I feel that I ought to talk to you, and yet I do not see how I could have said less than I have said as an honest man in telling to you that which I think is the fair and just thing for you because I feel that you ought to have it, that you cannot render efficient service with less; because if you go with the badge of inferiority on your shoulder and you go to Great Britain where your personal worth is not known, if you go to France where you are not known—remember that you are dealing with a foreign nation—those men do not know you by name, they know absolutely not one thing of you. It is as if you were in another world. It is true some of us now and then can carry you across, but these men have first to learn what and who you are

before they can deal with you, and when they have seen the badge of youth and inexperience upon your shoulder you are at a terrible disadvantage when it comes to putting your advice into effect.

I do not know how I can say more unless you want me to speak of other things. I feel as if I ought not to talk, but there is one thing here in the war subject here tonight that I had in my hand this evening when I was talking to the surgical section, but which I did not read. There are about twenty lines of text, which I took from a speech of my own brother last August that I think may interest this audience, and with your consent I will read it.

I will be glad if there shall be any one to ask me any questions to answer them as best I may.

Dr. J. P. Munroe, Charlotte: I would like to ask a question. It is proposed to send these resolutions to Washington. Talking about the matter this afternoon you remarked upon the wisdom of those who had friends among the representatives dropping in and paying them a nice, cordial, friendly visit, perhaps slap them on the shoulder and say, "These folks are friends of mine." Would it be a wise thing for this Society to send a committee there as representatives?

Col. W. O. Owen: I am afraid if I should answer that fully when I got to Washington I would be called upon the carpet. I have a very decided opinion, and some of my friends know that quite well. I would not mind advising them in the least bit personally. I would say in furtherance of the same thought that my own experience in Washington has taught me whenever anybody undertakes to force the hand of almost any member of either the House or the Senate is to invite almost certain failure. No one of those men there would be there if his people did not believe him to be an absolutely honest, upright gentleman. Certainly the majority of his people believe it and not one of them would be there, nor is there, who has not fought his way there out of 400,000 men, and when a man comes up that way he must have something in him; and to undertake to force your way through a thing of that sort you have to be mighty strong, and there are but few men I have ever known even in Congress itself who could force their way through. I have seen it done sometimes, but I can assure you it is a terrific fight. I have watched them in the Senate when I have known what was going on, and the situation there becomes very much tangled. I shall never forget to my dying day the scene as I saw Bob LaFollette come down with his papers under his arm, ready to hold the stage to the close. It was beautifully done. I had watched it from the start, and then when I saw my own brother, whom I love better than anything else on God's green foot-

stool and whom I think better of than any other living man, and when I saw him rise and tell what he knew of this, I knew that he was standing there holding the floor until such time as Hitchcock could get in, and I do not think I ever saw a more perfect byplay than was on the floor between the chair and the others engaged in the benign purpose of defeating LaFollette. I don't think I ever saw a madder man, who fought more bitterly for the privilege of getting the floor, nor did I ever see a man more adroitly defeated and driven off, as smooth as oil in a piece of well-worn machinery. It was beautiful.

Maj. J. W. Long: The chair would not assume to discuss the question, but would like to say by way of explanation of this resolution that the Owen and Dyer Bills are not intended for the aggrandizement of the doctors, but as an efficiency method to help overcome the brutal Hun. For instance, to give you just one instance of what a doctor could do if he had the power. You will recall the history of the Spanish-American War and the experience at Camp Chickamauga in which there were 20,000 cases of typhoid fever developed. The medical officer went to General Brook and said to him, "These men are getting typhoid fever from this well," and the general said, "There is nothing the matter with that well; bring me a glass of the water." They brought a glass and he said, "If it hurts me it has typhoid germs in it, otherwise not." It did not hurt him; he was immune, but 12,000 American soldiers died there from typhoid fever because of the stupidity of that general, and the reason he did not listen was because the American doctor did not have the authority to make him obey. We do not realize how much depends upon the doctor. When the English hospitals were returning only sixty per cent of their wounded back to the firing line, the Germans were returning eighty-three per cent. I am glad to say that the English and the French improved their statistics until today they are returning ninety per cent of their wounded. Calculate the difference, if you please, between sixty and ninety per cent upon the basis of thousands and millions, and you can understand how much depends upon the doctor. These bills are an imperative necessity for the outcome of this war. I did not intend to say so much because there is a greater than I to speak.

I want to say in the spirit of justice to Colonel Owen that he knew nothing about these resolutions, but came upon this platform at the invitation of those in charge of the meeting as a matter of courtesy. You understand that men who are in the army must be very circumspect in their remarks about matters of this kind.

I am just in receipt of a telegram calling for seven thousand more medical officers. I want to give credit to Dr. Rankin, Secretary of our

State Board of Health, who has put the machinery of the State Board of Health at the service of the Council of National Defense, has inventoried ninety per cent of the doctors of North Carolina, so we will have no trouble in furnishing as many as the Government says is our quota.

The following resolution was introduced by Maj. John W. Long:

Whereas, The Council of National Defense is organizing the members of the profession of the United States, who are not eligible for membership in the Medical Reserve Corps, into a new corps, known as the Volunteer Medical Service. Corps, and,

Whereas, The Volunteer Medical Service Corps is being organized for the express purpose of giving both men and women physicians an opportunity to render aid to the country in the prosecution of the war; therefore be it

Resolved, That the North Carolina Medical Society, in regular session assembled, unanimously endorses the plan of the Volunteer Medical Service Corps as organized by the Council of National Defense.

Unanimously carried.

The following resolutions were introduced by Dr. J. P. Munroe, Charlotte:

RESOLUTIONS ADOPTED BY THE NORTH CAROLINA STATE MEDICAL SOCIETY FOR AN OPTIONAL SELECTIVE DRAFT OF THE NORTH CAROLINA MEDICAL PROFESSION

Whereas, The world demand for a great American Army becomes more and more insistent each day, and

Whereas, An adequate medical service is an essential part of such an army, and

Whereas, the indiscriminate withdrawal of a large number of physicians from civilian practice is causing and will cause many communities to suffer on account of inadequate medical service, and

Whereas, It is evident that many conscientious and patriotic physicians labor under an embarrassing sense of responsibility to determine their post of duty amid the conflicting claims of family, community, and country, and

Whereas, We heartily endorse the principle of the selective draft as the most just and effective method of military organization; therefore be it

Resolved, That for taking care at the same time of the medical needs of the army and of the people at home and of the personal interests of the individual physician, it is the deliberate judgment of this Society that we should institute an optional selective draft of the North Carolina Medical Profession, and to this end be it further,

Resolved, That for the securing of justice to the individual physician and to the people at home and our soldiers at the front, the Governor of the State of North Carolina is hereby requested (1) to appoint from the medical profession of the State a commission of five, who shall pass upon the qualifications and obligations of the doctors of medicine in this State with reference to the needs of their families, their communities, and the army; (2) to request each doctor of medicine in this State to furnish him, on a form sub-

mitted to him, such information as may be necessary for the efficient and just action of the aforesaid commission; (3) to request each doctor of medicine in this State, who shall furnish the aforesaid information, to bind himself, on a form submitted to him, to be governed in this emergency by the decision of the aforesaid commission; and (4) to request the Councils of Defense in every county in North Carolina to coöperate with the aforesaid commission in order that no injustice may be done to any individual practitioner and no unavoidable hardship be imposed by this draft upon any community, and be it further,

Resolved, That this Society is moved to and takes this voluntary action because of its acute sense of its duty to perform in a time of national peril a service which no other class of our citizenship can render.

Moved that resolutions be adopted; motion seconded; carried unanimously.

[In accordance with the foregoing resolutions the Governor appointed the following members: Dr. Cyrus Thompson, Jacksonville, N. C.; Dr. A. W. Knox, Raleigh; Dr. M. L. Stevens, Asheville; Dr. F. R. Harris, Henderson; Dr. R. F. Yarborough, Louisburg. On May 22 they met in the City of Raleigh for the purpose of organization and drafting rules and regulations for the work, when Dr. A. W. Knox was elected chairman.]

Col. Owen: The point I want to bring out is Great Britain thinks it of absolute necessity that they should have a committee and they have set one known as the war emergency committee, one for England, one for Scotland and one for Ireland, and this committee says to the Medical man, "It is your turn to go," and he goes. Everybody is subject to the conscription law up to the age of fifty-five, medical men and all, and they have to go. When they are selected there are three things considered: The necessities of the Nation, of the community, and third, the necessity of the individual family from which the man is to be selected. I cannot but believe that such will be the case in the United States. Already we have more than 15,000 of your number, already we see we will need 6,000 more, and while there are 140,000 on the lists only about 80,000 or 100,000 are efficient, active men and women. Already we have got calls for 40,000 or one-half of that total number, and as yet we are not in the fight, we are only beginning. We have not many men on the other side yet, but the wounded are beginning to come back already, and it is going to require a great deal of care and thoughtfulness in selecting those of you who will go. France has got every man that she can use engaged right now with her army and her navy. She does not allow men any more to practice medicine in civil life uncontrolled. They have been compelled to assign this man to that community and another to that to care for the civilian sick. It is all a part of the Nation's business and

the sooner we recognize that this is a part of the Nation's business the better it will be for us.

Dr. J. P. Munroe: Having introduced the resolution I think it entirely proper that I should say a word or two. I have asked some of my friends connected with the army when they spoke of the growing need of physicians, if it was not altogether probable that the Government itself would apply the principle of selective draft to physicians as physicians. Some of them, perhaps without thinking very carefully as I thought at the time, said, "Yes, it is coming." Some others said, "No, they cannot apply the principle to physicians any more than to lawyers as lawyers," that if they applied it to physicians over the draft age they must make it applicable to everybody. From what Colonel Owen says it is probable it may be applied to physicians as physicians, but whether that is true or not, believing as I do in the principle of selective draft as it has been working for the Army, I cannot help believing that it will be a good thing for the medical service. It is a patriotic thing. When you look at what is going on in Europe, when you see for the last ten days that the scales have almost turned against us, civilization is held in the balance, and it seems to me that every doctor here, regardless of his age, his white hair, or his bald head, should feel it is his duty to do everything the Government will permit him to do, to advance the interest of democracy in the present war. Everything and anything we have, our services, our money, the Government is entitled to, and I think we ought to place our names before the Government. I am willing to place mine there twice. It is there once.

Dr. W. S. Rankin: I understood that Dr. Thompson was going to speak on this very subject.

Maj. J. W. Long (introducing Dr. Cyrus Thompson): Dr. Thompson is to speak and I want to say that when he talks

"A country dog has come to town."

VOLUNTEER MEDICAL RESERVE CORPS

Cyrus Thompson, M.D., Jacksonville

I am going to begin, then, with this remarkable remark: If I could be as successful as my friend suggests, I would be as happy as any "yaller dog" you ever saw.

I have to speak entirely off-hand, although my name was printed in the program; and I have heard so much excellent speaking tonight, that my thoughts are a little bit squandered; and I appear to myself to be speaking almost too late. You know the Irishman remarked to a living thing once that "You are speaking too late." He was eating eggs. He cracked one, threw off the shell, and swallowed it down; and he cracked another one, threw off the shell, and swallowed it down; and he cracked another one and swallowed it down; and being fond of eggs, he cracked another one and, tilting it down, something said "Peep peep"; and he said "Begorrah, you spoke entirely too late."

I am heartily in favor of these resolutions—the resolutions introduced by Dr. Munroe, and I have no very serious objection to the resolutions introduced by Dr. Long except that the National product is hardly as good as the North Carolina product. There might be objections to the National product and there can be no objection at all to the North Carolina form.

It is a wonderfully serious time, my friends, upon which we are come, and they are not likely, Colonel Owen, to grow less serious for a long period that stands before us. You might go upon the highest hilltops and get the farthest possible mortal view and cry out, "Watchman, what of the night?" And the watchman could not answer back, "six o'clock," or "ten o'clock," or "twelve o'clock and all is well with the world." He would stand, or sit, or lie supine in dumb silence. If he opened his lips at all he would say, "God Almighty only knows!" Not in my time nor in the historic knowledge of me or you was there ever such a time as the time that faces and awes the world today. My friends, from the time of my boyhood until a year ago, never a night came when I went to my house that I did not whistle all my cares down the winds; and a friend of mine remarked to me the other day, "Thompson, you don't whistle any more." I said, "No, I cannot whistle." Can you whistle? Can you sing? Can you laugh? Does the day go lightly by with you, or does something dark hang over you and pervade you every day? It strikes and shadows the old man and the young man, the old woman and the maiden, and it won't be long before even the merry laugh of the children in their play will fade away out of this once blessed land, which only a little while ago was a land of peace and civilization, the highest that had ever been made upon this beautiful world that was given us by our beneficent Father.

But, I am not going to make a war speech. This resolution says here that a medical service is an essential and integral part of the Army; and it is an essential and integral part of the Army. Colonel Owen has said that in England and in France they have already practically ex-

hausted their medical-man supply; and as the allied countries of the world are saying, "Hurry up and send us men," (and we have the men, and are sending the men), they will begin the cry and the cry will grow, "Send us medical men"; and if they cannot be got from here, doctors as well as food and men, then the men that go may perish from remediable sickness and wounds; and the cause perishes, and Christianity, and everything that has stood for righteousness and peace, perish from this fair world of ours. An adequate supply of medical men cannot be got except by some sort of inconvenience. We have responded nobly, as these stars here tell, and yet Dr. McBrayer says that out of 100 counties 23 counties have not sent a single man into the medical service. We may boast and show our feathers, but when that fact is put, our feathers fall like the gaudy feathers of the peacock when he looks at his feet.

I am prouder of North Carolina than I can be of any other State because in every good and great work my State has taken the lead, and I am standing here tonight and asking the State of North Carolina, the doctors in North Carolina, through the deliberations of the Medical Society of the State of North Carolina, to set the pace for every State in the Union.

Colonel Owen has said here that the doctors in France are not left to volunteer, they are ordered by the Government, told to go here, go there, do this, do that. And why not? I am not a lawyer and I love the constitution; I would not have anything done wrong, but I would have the Nation saved. I cannot for the life of me see why the medical profession, medical service being an integral and necessary part of the armed forces of a country, could take refuge from service under any law; why this country has not a right to go and draft men into the medical service, draft them as they have done in France, as they have practically done in England, draft them because of their special fitness and not fail to draft them because somebody might say you cannot draft a class. And why do I say it? It matters not what Constitution there may be in a land, a constitution is made for the preservation of the land, and when it stands in the way of preservation of the land, the constitution must lie down and let the right thing, the spirit of it, prevail; and when we have got peace we will go back to the letter of the constitution or write it anew.

I sit upon a local board, I can pass upon a man, reject him or accept him. If he is not wholly fit or unfit, I can send him to an advisory board, and if he is partly fit he can be held for limited or special military duty. Why? Because of a special qualification. He may be a photographer, be a bookkeeper, not fit for general service, but for special. What is the difference, I ask you, in any legal aspect, what is the differ-

ence, in taking a man who is a doctor and holding him simply for his special qualification, the fact that he is a doctor, when a doctor is an absolute necessity for the armies of this country, and for the armies of all the allies in Europe?

But are we going to sit here, men of a proud profession in a proud State like North Carolina and say, "They haven't got a right to do that"? Are you going to sit here and say that? We are right now, the medical profession in North Carolina, is going to come to a new birth on a high tide, or we are going to show a yellow streak, lose our prestige, and die on a miserable ebb. What are you going to do? Let's read these resolutions a little bit, because something else is to come, and breakfast has to be eaten in the morning, and more things to be done tomorrow.

I know men here—Dr. McBrayer—I don't doubt his patriotism. The call might come to go to the Army and the question with him is, "Where can I be of most service, at the head of the institution at Sanatorium or in the Army, letting that work go?" Here might be my friend Dr. Rankin, Secretary of the State Board of Health. He is not too old for the young patriotic blood to boil in him, and he might feel the call of the ancient righteous. He would say, "Which would serve my people best, to remain in Raleigh or go to the Army?" Dr. Wood might say, "Where can I serve best?" Willing to volunteer, many another like them, yet wanting to do the State and the Nation the greatest possible service, modest, embarrassed to decide for themselves. This resolution provides a way by which their post of duty can be fixed. All it asks is that you say to the Nation, "Put me wherever I can best serve, and let me serve where my service is needed most."

I will repeat here and now that your answer and your vote is going to tell what you are, whether you are a man or a coward. If you are a constitutional coward, you will vote "No." And you may be a constitutional coward and not be a bad man; but it takes a man of courage to be a genuine doctor, it takes a man of courage to be a sure-enough soldier, it takes a certain cellular constitution to make a man at all. A whole lot of fellows go along with coats and collars and neckties that are not men at all. They are not the men that make up the Medical Society of the State of North Carolina. No, they are not; we are made of better stuff.

As old as I am, when two of my boys went in the Army under age last year I said, "Go on, God bless you; if I were not as old as I am, I would go with you. I can stand to see you go, but if you hung your heads and refused to take your portion of the burden, then I swear, my sons, you would kill me." For anything is better than for a man to be a coward; he had better be a bold thief, he had better be a yeggman,

taking his risk, a bold highway robber, than to be a timorous slacking coward, calling himself a man.

We are going to take care of things and we are going to have consideration for all these coördinate dependencies. We are going to relieve men of embarrassment. Is there anything wrong in that? You have got to come to it because America is not going to die because a profession that can save it won't save it." The bird that can sing and won't sing ought to be made to sing." I am just asking my canaries and mockingbirds to break out with a joyous call. As my friend McBrayer, quoting from Isaiah, said: "Here am I, send me." "The Master has need of him; loose him and bring him." Are we going to take this action or not?

I helped to write these resolutions. You can tell it by the good English in them, because I am a good Englishman and I am a good Frenchman and I am good Irishman, and I am an everlastingly good American. Do you want voluntarily to offer your services if they can be spared from your communities and from your homes? They will be accepted, and you and your children after you, your communities about you, your courage having brought them consolation whatever may befall, will know that like honest men you did not throw the burden off on somebody else. When they were rolling the logs you said, "I am as good a man as any in the field; give me half the stick and bear against the log."

We are going to make ourselves proud of ourselves, we are going to make the State of North Carolina proud of us, we will make our sons and our families proud of us, we will make every State in this splendid Union proud of us, or they will be saying with shame that there was one big orange streak in the medical profession of North Carolina, and, like poor Peggoty, it died on the ebb.

Resolution unanimously carried.

Dr. W. S. Rankin: I move that this Society endorse the plan as endorsed in the letter from Dr. Franklin Martin to Dr. Long, because the resolution is in perfect harmony with the National Council of Defense.

Carried.

Dr. E. J. Wood, Wilmington, introduced the following resolution:

Whereas, There is and must be increasing scarcity of food throughout the world and America must feed her soldiers and her friends, and

Whereas, The doctor in every community can and must be a maker of public sentiment.

Therefore, Be It Resolved, by the Medical Society of the State of North Carolina that we pledge to Henry A. Page and the county food administrators our individual and collective support in the great work which he is wisely and fearlessly doing.

Motion that resolution lie over until morning; motion seconded; carried.

Maj. John W. Long: I have in my heart a good deal to say in discharging this pleasant duty, but because of the lateness of the hour I will say only a few words. It is my pleasure to introduce to you a man who is known and beloved by every one of the 15,000 members of the Medical Reserve Corps of the United States Army. I might say by the entire profession of the United States, because during the last two years there is no member of our profession who has come closer to the entire profession than has Col. Robert E. Noble.

North Carolina owes Colonel Noble a special debt of gratitude. I can tell you the story in a very few words. When Germany made war upon the United States the War Department authorized the Red Cross to organize a number of hospitals, which it did promptly and efficiently; in many instances furnished a personnel that was the astonishment of the profession both in England and in France. But there was one thing which the Red Cross did which was sad for us. The Red Cross laid down the rule that it would not accept surgeons from a hospital which could not furnish as many as six surgeons for the service and leave six surgeons at home. Now, you see what that means. It eliminated a State like North Carolina that did not have any large hospitals. Later the War Department decided to organize its own hospitals. North Carolina obtained permission from the War Department for a base hospital after having been turned down by the Red Cross. We have no criticism of the Red Cross. It acted in good faith. Even the War Department said we could not have a base hospital, but those who were interested in the matter appealed to Colonel Noble and he pointed out the way by which a base hospital from North Carolina might be secured. Then the War Department said, "We will give North Carolina a base hospital provided the personnel can be secured from the profession in the State." Other obstacles came in the way and again those interested appealed to Colonel Noble, and through his influence North Carolina finally secured Base Hospital No. 65, which is distinctly a North Carolina hospital in its personnel, in its 100 nurses and in its 200 enlisted. Whenever you hear of No. 65, remember it is your own base hospital.

Before I take my seat, after expressing this tribute of gratitude, the last thing I want to say is to call Colonel Noble's attention to our service flag, with its 345 stars, all of whom are members of the North Carolina Medical Society.

RELATION OF THE MEDICAL PROFESSION TO THE ARMY

Robert E. Noble, Brigadier General, Medical Corps, N. A.

Just a little more than one year ago the United States was forced by acts of injustice and inhumanity towards its citizens to declare that a state of war existed between the United States and Germany. Later a similar declaration was, for sufficient reason, made against Austria. The question is often asked, "What has the United States done in this year of war?" This is not the proper place or time to discuss what the Nation has done, but what the Medical Department has done is a matter of vital interest and importance to the medical profession. In order to give an idea of the enormous expansion of the Medical Department I will say that on the day war was declared there were five officers on duty in the Surgeon General's office, including the Surgeon General, with about eighty clerks. Today there are 175 officers and more than six hundred clerks, and the expansion has not reached its limit. There were in the Medical Corps at the outbreak of war four hundred and thirty-five officers and 500 available officers of the Medical Reserve, of which 135 were on duty, a total of 570 medical officers actually in active service. Today there are 17,808 medical officers on duty, including the Medical Corps, the National Guard, and the Medical Reserve Corps. Hospitals were, with the exception of four general hospitals, small post hospitals, splendidly equipped but only large enough for the needs of the then existing garrisons. Since the declaration of war a hospital system has been created with camp and cantonment hospitals that have a combined bed capacity greater than that of the public hospitals of New York, Philadelphia, Chicago, St. Louis, Baltimore, Richmond, Atlanta and New Orleans.

In addition, other hospitals designated as General Hospitals have been established, many of more than 2,000 beds, and a few special hospitals with but 200 beds each. These hospitals are of two types, general and special. The general hospital is defined by its name, that is for the reception, care and treatment of all classes of cases. The special hospitals are for the reception, treatment and observation of patients with certain diseases or conditions, as tuberculosis, mental and nervous diseases, the blind, deaf, etc. A third type of hospital remains to be developed or more properly speaking is now in the process of development —the reconstruction hospital. In these hospitals those soldiers who have been disabled from disease, accident or wounds will, in so far as medical

and surgical skill permit, be made into men who will be not only self-supporting but men whose labor will add to the productive wealth of the country. All of this will require additional bed capacity. Today the total bed capacity of our hospitals in camps, cantonments and elsewhere, completed and under construction in the United States only, is greater than the combined bed capacity of all the public hospitals of New York, Chicago, St. Louis, Philadelphia, Detroit, Boston, San Francisco, Baltimore, New Orleans, Pittsburgh and Cincinnati; a hospital system that has been built from the ground up, buildings, equipment and personnel into living, functioning institutions that are giving to the soldier medical and surgical attention equal to that given by the best civil institutions of the country. The chiefs of service are men of more than local reputation. The professional staffs are, if I may so express it, hand picked men. Your own State has contributed to this number and will contribute others. Major Long, the director of Base Hospital No. 65, will soon with his entire organization be mobilized for duty, and when at its final station overseas Base Hospital No. 65 will render to the soldier that same efficient and tender care that in civil life the members of its staff have given you, your families and your friends. Another of your surgeons, Lieutenant-Colonel Burrus, is in command of the Base Hospital at Camp Beauregard. Others of your society are in the service, and officers of your State Board of Health have returned from the camps to be present at this meeting.

North Carolina has 17.2 per cent of its medical profession in the service, the second state in the South and sixteenth in the Union, .1 of 1 per cent below Florida, the first state. Of your cities, Charlotte has 36.6 per cent of her physicians and surgeons in the service, the first city of the Union; of the smaller cities Hendersonville has 50 per cent.

The planning and building of a hospital, or for that matter the building of a number of hospitals, is a small matter when compared to the task of selecting the personnel and the supplying of equipment.

Do you know that at the outbreak of war less than ten per cent of instruments needed each year in the United States were manufactured here; that there were no hospital beds on the market to speak of, and that other hospital equipment was practically nonexistent? Yet today our hospitals are equipped with all the essentials and many of the non-essentials. Do you know that on the outbreak of war there were fewer available medical officers than are now on duty in or assigned to the hospitals in the National Guard camps alone; that there were but 403 nurses in the Army Nurse Corps, although we now have an average of one nurse on duty in the United States for each ten beds that are today

available for patients; that we have at each hospital a staff far in excess of the actual need of the institution in so far as giving adequate and proper care to the sick or wounded is concerned? These medical officers are not wasted; on the contrary, they are being trained for the best of all duties, the conservation of human life. These hospitals are schools of medicine and surgery where we train and create staffs for the large number of hospitals now being organized for service abroad and for the additional hospitals that will be created in this country.

These remarks apply only to hospitals in the United States. Of the hospitalization abroad I am not permitted to speak, but when you think of such men as Finney, Thayer, Crile, Brewer, Cushing, Peck, Hart, Murphy, Beasley, McGuire and dozens of others whom I might name, there need be no fear of a lack of competent medical men. So you can carry to your friends that comfort that comes to one in the knowledge that the best the country has to give is at the service of the sick or wounded.

The hospitals have been manned and equipped, and the chiefs of service are men of more than local reputation. In brief, the department has so far met every demand. But as to the future, the hospitals that have been established are but few in comparison to the number that will be demanded. For we must establish and maintain a double system of hospitals, one for the care of the sick or wounded in Europe and the other for service in this country.

So much for the hospitals. What of the personnel? For medical officers, we have expanded from 570 in the service at the outbreak of war to 17,808 now on duty; nurses from 403 to 9,032 and enlisted men from 6,500 to many many times this number. The past and the present are well provided for, but what of the future? The supply of available medical officers is almost exhausted. To meet this demand on the Medical Department for officers, the Surgeon General last week sent a letter in part as follows to the editors of medical journals:

1. I wish to call to the attention of the profession at large the urgent need of additional medical officers. As the war progresses the need for additional officers becomes each day more and more apparent. Although the medical profession of the country has responded as has no other profession, future response must be greater and greater. The Department has almost reached the limit of medical officers available for assignment.

2. I am, therefore, appealing to you to bring to the attention of the profession at large the necessity for additional volunteers. So far the United States has been involved only in the preparatory phase of this war. We are now about to enter upon the active or the fighting phase, a phase which will make enormous demands upon the resources of the country. The conservation of these resources, especially that of man-power depends entirely upon an adequate medical service. The morning papers publish a statement that by the

end of the year a million and a half of men will be in France. Fifteen thousand medical officers will be required for that army alone. There are today on active duty 15,174 officers of the Medical Reserve Corps.

3. Within the next two or three months the second draft will be made, to be followed by other drafts, each of which will require its proportionate number of medical officers. There are at this time on the available list of the Reserve Corps, an insufficient number of officers to meet the demands of these drafts.

This is a time that each must take stock of himself, weigh well a serious question, for the doctor who can serve must serve. We must win this war in order that our institutions may be preserved. To lose, means that we will be a subject race or for generations a nation in arms in order that we may preserve our national existence. To lose means a transference to us of the European military system of huge standing armies with the possibility that time may convert a non-military, peace loving people into a people through necessity, by a process of evolution cursed with the German system of militarism. To my mind the medical profession can do more than any other profession towards the preservation of our ideals and our national interests. The profession in past wars has given more than any other profession, and in this war will live up to its traditions of service to humanity without regard to self. As I said before, this is the time for every man to take stock of himself and come to a decision as to his future. Where shall he serve? I say *where* shall he serve, having in mind the needs of the civil population. Many physicians practice in rural communities. Can they be spared from that community? Probably not. A greater number live and practice in cities and towns. Can they be spared? Yes, in considerable numbers. Do you know that many rural communities have since this war begun been without medical attention; and that the Medical Department has discharged officers in order that they might return to their homes to render service to their own people? These officers can be replaced to the service only from cities and towns. Today for the needs of the next draft there are on the inactive list of the Medical Reserve Corps a comparatively few officers. Many of these are officers who were transferred from the old Medical Reserve Corps and are far beyond the age limit for service either at home or abroad; others are teachers in medical schools and can not be called without serious detriment to the future of the profession.

It is estimated that there are in the United States 90,000 medical men within the age limits for military service, 22 to 55 years. Some of these, probably 10,000 are by reason of non-citizenship, physical disability or for other causes, not eligible for a commission. Of the remainder, 23 per cent are commissioned. Is there any other profession which has

done so well; do you know of any other profession that will do so well; is there any other profession that gives itself as a profession to the dangers and hardships of war as does the medical profession; noncombatants, now through Germany's disregard for the terms of the Geneva Convention without that protection, exposed to the same perils as the combatant troops and in these perils without regard to self, cheerfully giving their lives in saving the lives of those wrecked in battle? You will find this offering in a like ratio from no other profession.

As great as has been this offering by the profession, it must be greater. Without a large increase in the number of Medical Reserve officers we can not meet the future with the consciousness that the best possible service will be rendered those who go into battle.

War is the most fearful thing that can come to a people. But its horrors can be lessened by an adequate medical service. The knowledge that a medical service chosen from the profession, a voluntary draft, the giving by the profession of its best without reservation or stint, will be a comfort to those at home and a tower of strength to the soldier who knows that, sick or wounded, the best brains and skill of the profession will be devoted to their care. This is the kind of service the Nation wants and the service it must have.

This war is the most atrocious ever waged, but for us a necessary war, a war that will require the coördinated efforts of the allied nations to win. To lose means for generations a world in arms with the daily menace of other wars.

The sacrifice of life has been enormous; how great no man can tell. Now we are taking up our burden of war and must like men bear this burden until the end. You of the profession can lessen the horrors of war, can lend comfort to the minds of the families of the soldiers by offering your services, by being enrolled in the reserve and standing ready to respond to a call for service. This war will tax the Nation's resources to the uttermost and the profession is one of its greatest resources. The medical service is the great conserving agency of war, and without the full and voluntary coöperation of the profession the ultimate benefits of this great agency cannot be had. The country needs you, possibly not today, but tomorrow; so today, without reservation, put your services at the disposition of the Government for tomorrow. For it is a truism that medical preparedness rests with the profession, not as individuals, but with the profession as a whole.

Public opinion in our country governs. Just so long as public opinion supports the Government just so long will we give our best efforts to the war. In my opinion a failure in our medical service will do more to destroy public confidence than failure in any other branch of the

service, for we are a people very sensitive where the care of the sick or wounded is concerned. If our hospital system fails through an inadequacy of officers or for any other cause, what a fertile field for German propaganda, with all its attending evils, discontent in the home fostered by the belief or knowledge of the useless waste of life. The people will give without complaint for the defense of ideals and of liberty, but they will not give quietly when the medical service fails—it is for the medical profession to see that there is no failure.

DISCUSSION

Maj. Charles O'H. Laughinghouse: I take it for granted that if there is any interest in any remarks that I may make that in all probability it is because of the fact that I have recently had some experience in a training camp, and that those who contemplate asking for a commission are naturally interested in that kind of a life. So I will attempt to confine myself entirely to the regime of medical training camps.

It has been my privilege to spend two months and a little more at Camp Greenlief. I went down with some foreboding because it took me about six hours to get from Chattanooga to Camp Greenlief on account of the roads, it was bitter cold, and I thought, of course, I would freeze to death, and so on. I struck it there at the very hardest part of the winter. To my surprise, even though we did sleep with windows and doors open, even though we slept in barracks not ceiled, though we didn't wear shoes, but high-topped boots, and even though because of natural physical laziness I rode everywhere when I should sometimes have walked, I pulled through those two months without any great deal of trouble. I came out of it one-half inch taller, ten inches smaller, and two and a half inches broader. I have slept more since I have been in Camp Greenlief than during any similar period of time since I graduated from high school. The food I have had to eat has been good, in quantity, in quality and in preparation. The environment I have been in I can say without hesitation is the finest environment it has ever been my privilege to be in. The very best of the profession of America are in these training camps. The blood and the muscle alone are not there, but the brains of the profession and the stamina of the profession and the fineness and splendidness that make the profession of medicine that great thing which it is, are exemplified in the medical training camps of the United States. Men have not gone down there for fun. For my own part I volunteered not because I wanted to. There is but one thing worse to a settled medical man than volunteering, and that is the realization that he has not volunteered, and

when his sacrifices come there is no need to sit and think about the sacrifices you have made; they are not sacrifices. Those of us who have been seasoned by some little experience in these camps realize what we thought in the beginning were sacrifices are nothing more nor less than a splendid investment, not only for ourselves and our own wives and our own children, but the children and the children's children that are to come, and it is this spirit which we find in training camps. We not only have a physical and a spiritual life, but, even though I have had some experience in days gone by with post graduate courses, I am candid to confess that the best post graduate course it has ever been my privilege to attend has been given at Camp Greenlief. Men are taught medicine and surgery by the very best teachers that can be had. They tell us down there that we have a three months holiday, a three months recreation with pay. Well, if recreation is a change of occupation, I believe that is what Dr. Mitchell says, that is a fact. There is some occupation. You are too busy to get homesick, you are too busy to get tired, and in a little while you imbibe the spirit of coöperation and effort and determination until in a very few days the work that would have at first seemed exceedingly irksome gets to be very, very pleasant. For the last three weeks I have been away from Camp Greenlief over at Camp Forrest, and I want to say for the benefit of the ladies present, that during my short experience in the army, in the medical training camp, and in regular training camps I have not seen a drunken man in a uniform. It is the same way everywhere in this particular, and I am quite sure I will not misstate it, for Fort Oglethorpe should not be any different from any other place, there is, I believe, in the army today a teaching both by precept and by example that will eventually—I won't say eventually—that is even now regenerating the morals of men. There is cleaner living in the army today than there is in civilian life; there is a certain idealism put into the hearts of a private that makes him feel that it is up to him to be a grand man, straight and fine and manly, because unless he is, his own personal deportment is besmirching the ideals that the allied nations are fighting for.

I believe that the whole thing can be summed up by repeating to you a speech that a negro woman gave a few days ago to some negro troops that were being entrained in her own community. She got up there and looked at the troops and said, "Young men, that flag that you see over there is the flag what gin you yo freedom, and if yo wants to keep yo freedom you mus' keep dat flag. De ladies of de colored race is put in yo traveling bag a kit, and in dat kit dey is put a wash rag and a cake o' soap to keep yo bodies clean, and dey has put a tooth bresh in dar to keep yo mouth clean; dey has put a lookin' glass in dar so you

can look into the face of a man who can't afford to retreat; dey has put a Testament in dar to keep your soul clean, and dey has put a pair of scissors in dar to cut yo way to de Kaiser, and don't you come back until you do it."

Dr. J. Allison Hodges, Richmond: A moment ago I got up to perform a duty in erecting another milestone in North Carolina's medical progress, and I am getting up now to perform another duty, which is entirely unasked for by anybody, probably not thought of by any one but myself, but which I believe that every one of you will join with me in saying is a necessary duty, because if we want to make this meeting of the North Carolina Medical Society a patriotic one as well as a scientific, professional one, that is, a complete session, I do not believe that it should adjourn without our hearing from one in this audience, who is the Nestor of our profession, of whom we North Carolinians are proud, and one who is prevented by his years in not being able to join with these justly praised soldier boys of ours, but who has a heart that beats just like theirs. I would like for him to tell you, and he does not know I am calling on him, how men of his age feel, and some of the rest of us feel in this emergency when, as Kipling says, the whole world seems to be filled with just two classes of people—"human people and Huns"—and I call on Dr. A. W. Knox, of Raleigh.

Dr. A. W. Knox, Raleigh: I utterly fail to recognize myself in what my friend, Dr. Hodges, has just been saying of me, and I thought he was alluding to some one else until he called my name, for I had no intimation that I would be called upon to speak on this occasion, yet I cannot sit silent after such a kindly and cordial call to my feet. If I could put into glowing words all the stirring emotions that well up in my heart, I would make you an eloquent speech. Alas! I lack that power. Yet, even without the gift of eloquence, I will say a few simple words.

In the beginning of our entrance into this world-war, my greatest regret was, that I could not go to the front; and I did, indeed, apply to the Surgeon General for a commission, although I knew it was out of my reach, because I wished to show the right spirit and the willingness to serve in any way in my power. Unfortunately, there was one question in the application blank which asked for the date of my birth, and I had to answer it. The Surgeon General wrote me a very kind letter, in which he said: "We appreciate your patriotic impulse, but we are looking for men of maturity—you are a little too young." But even then, I always had the feeling that some opportunity for service to my country would come to me later, and come it did—very soon I am glad

to say—in the work of the Auxiliary Medical Defense Committee, the local board of exemption and other collateral work.

There is something for every one to do for his country in a time like this. If he really wishes to, he can find it. If he is whole-heartedly willing, it will find him. It has found me, and I am proud to say that in that work—laborious and trying as it often is—I find real pleasure and satisfaction, because I know it is an important and helpful service to my country. It has cost me the loss of much of my practice; yet I accept that cheerfully; and we all must welcome even greater sacrifices still, if we would even approach that fine spirit which animates our soldiers at the front, who are gladly giving their lives.

I have always felt that medical men ought to be drafted, just as enlisted men are; and I fail to see why my son of 25 should be called to the colors and his father—if of military age—be allowed to choose whether he will or will not serve his country in her hour of peril, simply because he is a doctor.

The problem for those of us who must stay at home is, to quickly find our own best field of work and to cheerfully take up and do with our might that which the Government asks us to assume, each one doing perfect work in the sphere to which he is assigned.

The President: I have sat here for two days listening, and have kept my mouth shut. I have heard war talk. I am like Dr. Knox. I have reached the period in life when they will not take me to go to the war. I did as Dr. Knox did. I took the appointment from President Wilson, through our Governor at Raleigh, to work on the exemption board until it nearly worked the life out of me. I had to give it up. There are other things that I can do. There are other things, Colonel Noble, that I have done, not in any boasting way, for if I could, I would do more. During last year I could do no more, so I gave out of my pocket $200 to the Red Cross work, I gave $50 to the Y. M. C. A. work, I bought $1,000 worth of bonds in the first issue, I bought $5,000 worth of bonds in the second issue, and when General Cameron's soldiers passed my window on April 6th, after seeing those men march by, I got up and went into my bank and bought $2,000 more of Liberty Bonds, with the outstanding promise to give each year $200 to the Red Cross as long as the war lasts. Now, the question I want to ask you, gentlemen of the medical profession that are not going is, Are you buying Liberty Bonds? Are you letting Mr. McAdoo have your money that he may feed soldiers that will go to the war? If you are not, you are as bad a slacker as any slacker in America. When I hear men worth $75,000 to $100,000 buying $100 worth of bonds and bragging about it,

then I feel as if there should be some power of this Government to take his money away from him.

I could not let this opportunity go by without saying something.

CONTROL OF VENEREAL DISEASES IN EXTRA-CANTONMENT AREAS

B. W. Brown, M.D.
Surgeon United States Public Health Service, Camp Greene, Charlotte.

I have been invited to deliver an address before this Association on the Control of Venereal Diseases in Extra-Cantonment Zones. As you may know, there is a five-mile zone around every one of the army camps, and this area is under more or less military control. Officers of the Public Health Service have been placed in charge of sanitation in these zones and are coöperating with the Army, State and local health authorities to improve health conditions, and thereby aiding in the greater efficiency of the troops. This plan is working very satisfactorily, and excellent results have been accomplished. Now I do not propose to read a paper on venereal diseases, but intend to invite your attention, in a short address, to the importance of this matter and discuss the measures which, in my opinion, are necessary to control the situation, hoping that a free discussion will follow, for this work is in its incipiency and a free interchange of ideas will be of great value.

It would be a waste of time to discuss before a Medical Association the danger to the civil population from venereal diseases, for we have known for years that these diseases were eating into our civilization like a cancer, filling our charity institutions with paralytics, our asylums with insane persons, and causing blindness in thousands of children every year. It is greatly to our shame that the profession has not, long ago, broken through the social conventions which have screened this enemy of the human race, cast all false modesty to the winds and publicly and privately instructed the people in regard to the serious menace, physically, mentally and morally of these diseases and emphasized the importance of early and continued treatment.

But my friends we can no longer delay this action. Our country is confronted today by the most serious condition that it has ever been called upon to face. If the Huns break through the wall of bayonets guarding the western front, not only will our institutions be imperiled, but our very homes and firesides will be endangered. So it behooves us to take advantage of every detail, of every measure that will enable us

to add to the efficiency of our troops, and in this work you have not only a duty to perform to your country, but a personal responsibility, for you are working for your boy and for my boy, who are training in these camps, and for your daughter and my daughter who may be imperiled by this increased spread of venereal diseases. You cannot lay this responsibility on the health office or on the police department, but you have got to get behind this movement, put your shoulder to the wheel and do your bit.

In order that you may grasp the great importance of this work, I am going to read a circular letter sent out by the National Council of Defense. It explains better than I can the menace to the armies of the world from venereal diseases:

SHALL VENEREAL DISEASES MENACE THE NATION?

The Council of National Defense urges public officers and citizens of the United States to employ every means possible in the repression of prostitution and the control of venereal diseases for the following reasons:

First. Because we must prevent such conditions as have developed in Europe since the beginning of the war.

1. The number of syphilitics in the army must certainly be several hundreds of thousands. . . . Since the war began a total equivalent of sixty divisions have been temporarily dithdrawn from the fighting for venereal diseases. (Vienna report.) *Journal of the American Medical Association*. March 10, 1917. In the Austrian Army 80 per cent of some regiments are infected.

2. During the first eighteen months of war one of the great powers had more men incapacitated for service by venereal diseases contracted in the mobilization camps than in all the fighting on the front.

3. In the war zone of France there has occurred an alarming increase of venereal diseases, both amongst the soldiers and the civilian population.

4. The failure of the . . . Government to protect their soldiers from these evils (sexual vice and alcoholism) is the gravest error that the Government has committed: for these vices have proved more destructive to the . . . people since August, 1914, than all the . . . artillery, rifles, hand grenades, poisonous gases and fire blasts. Those killed by shot and shell transmit no poison to their families and descendants—the victims of alcohol and prostitution do.—From a letter by President Emeritus Charles W. Eliot of Harvard University, quoted in the *Survey* of September 8, 1917.

5. Thousands upon thousands are withdrawn from the fighting army for weeks. But they are not only missed as fighters, they also cause expense and great obstruction through their transportation back home, through the necessity of establishing hospitals for thousands who were not wounded by the enemy. They burden the doctors so necessary for the care of the wounded. . .

But the very worst part of the venereal diseases is not the diseased condition immediately following infection, but the ailments frequently developing in later years, when the war is long past and the old infection, already forgotten, and the transmission of the disease to the family after the return of the troops to their homes. Prof. Albert Neisser, *Frankfurter Zeitung*, January, 1915.

Second. Because serious conditions have already developed in the United States Army, due largely to conditions in civil communities.

1. At one National Guard camp 502 new cases of venereal diseases were reported in one week.—Official Bulletin, November 20, 1917, p. 6.

2. It was found that most of the cases at one large cantonment originated, not in the camp or near the camp, but in civil communities from which the men came or through which they passed on the way to camp.

3. In the case of all the troops on the border, a vastly larger proportion of venereal diseases was contracted before reaching the border than was contracted afterwards.—*Social Hygiene*, Vol. 3, No. 2, p. 220.

Third. Because the War Department has asked our aid.

1. Our responsibility in this matter is not open to question. We cannot allow these young men . . . to be surrounded by a vicious and demoralizing environment, nor can we leave anything undone which will protect them from unhealthy influences and crude forms of temptation.—Secretary of War Baker, in his letter of May 26, 1917, to governors of all states.

2. We are not going to be able to obtain the conditions necessary to the health and vitality of our soldiers, without the full coöperation of the local authorities in the cities and towns near which our camps are located or through which our soldiers will be passing in transit to other points.—*Ibid.*

Fourth. Because venereal diseases result in the infection of innocent women and children.

1. No disease has such a murderous influence upon the offspring as syphilis; no disease has such a destructive influence upon the health and procreative function of women as gonorrhea. . . . Inherited syphilis constitutes a powerful factor in the degeneration of the race.—Prince A. Morrow, M.D., *Social Diseases and Marriage*, Chap. 1.

2. All previous war experience shows an increase of venereal disease. . . . When peace comes there is the danger of grave and widspread dissemination of these diseases. It is for that that we must be prepared and there is no time to be lost.—Report of National Conference for Combating Venereal Diseases (London) Social Hygiene, Vol. 3, p. 235, No. 2.

According to a report from Surgeon General Gorgas there were reported from 31 cantonments 21,742 new cases of venereal disease for a period of twelve weeks ending December 7, 1917. (P. H. I., March, 1918.)

The Royal Commission of England on venereal disease states that in the larger towns in England 10 per cent of the inhabitants are infected with syphilis and that gonorrhea is even more prevalent. This means that in London alone there are 450,000 syphilitics.

Now I am sure that every man in this audience, after listening to the array of facts contained in this letter, must be impressed with the serious situation that confronts the American people.

The control of venereal diseases is not only the most important problem to be solved, but the most difficult. If the Government will furnish the money, we can easily exclude malaria from the camps, vaccinations will take care of smallpox, typhoid and paratyphoid fever and

tetanus, the application of modern sanitary methods will eliminate dysentery and reduce to the minimum the effects of the less serious communicable diseases, but all the money and all the authority of the Government cannot control the venereal menace, unless we have the hearty and full coöperation of the people, and especially of the medical profession.

I shall outline in more or less detail the practical solution of the question, and shall discuss the matter under the following heads:

1. Educational campaigns.
2. Clinic.
3. Ordinances.
4. Police coöperation.
5. Government coöperation.
6. Prostitution.
7. Prophylaxis.

I am a great believer in the good intentions of my fellow-man, and have found that when you explain to the people a measure that is for the good of mankind and ask for their coöperation, you usually get it. In other words, first educate the people and then enforce your laws. In the educational campaign, call a meeting of the city officials and representatives from all of the civic organizations and state clearly the danger to the civil population and to the army of venereal diseases and outline in detail your practical plan.

The Government is now arranging for a nation-wide campaign on social hygiene and venereal diseases, and the plan outlined by Dr. Rankin, State Health Officer of North Carolina, is, in my opinion, an excellent one. His idea is to have the governors of each state call a convention of representatives from the churches, colleges and Y. M. C. A. and put before them the importance of the work, furnish them with the necessary literature and get them to prepare every community in the State for the practical work which we hope to undertake in every city. Too much stress cannot be placed on the educational side of this work.

The Clinic. Now all of this publicity will be of no avail unless we can offer a practical method of stamping out the disease, and the first and most important step in this direction is to establish a clinic where the unfortunate ones cannot only be cured, but be fully instructed in regard to the evil of spreading the disease. This clinic must be well organized. It must be capable of carrying out the best methods of treatment, and it must be equipped to follow up the work, to see that patients return at the proper time for treatment and to locate the carrier. Records must be kept, and remember the two essential points in the record—the carrier and the date for return treatment.

For the purpose of meeting these important features, a follow-up nurse is necessary, and a probation officer, preferably a woman, is almost essential. Again we must resort to camouflage in establishing our clinic. If we put up a sign "Venereal Clinic," no one will come, so the clinic must be located in some building where all classes go for legitimate business. All cases in the infective stage should be sent to a hospital.

The clinic should charge a small fee when patients are able to pay, and treat free those not able to do so. The success of this work will largely depend upon the free administration of "606." Now, how can we obtain it? Owing to the important relation of this work to the efficiency of the troops, it would seem that the Government should assist in its purchase, and we expect to get a bill through Congress on the extension plan, which is now available for roads and rural sanitation—that is, the State to pay half and the Government half. But as you well know, it takes time to pass bills, so we must get private subscriptions to carry out this measure. The necessity for this work is too urgent to postpone. We give liberally to other appeals. Why not do the same for an undertaking which means the physical and moral salvation of our boys and girls?

Ordinance.—We can educate the people, establish the clinic, but without properly drawn ordinances, we will not be able to reach the men and women who care nothing for humanity, but believe they have the right to infect whomsoever they choose.

The first ordinance to enforce is one requiring the reporting of venereal diseases by the doctors, and preferably by numbers. Each physician to keep a record, giving the name and address of the patient, and, when possible, the name and address of the source of infection. This record not to be made public, but open to the inspection of the health officer.

Many ordinances on veneral diseases have been drawn lately, both good and bad, but I have not the time to discuss them, but I will read an ordinance drawn by Dr. Hudson, health officer of Charlotte, and myself. Good results have been obtained under it, and while it is not perfect, we believe it will accomplish results:

AN ORDINANCE FOR THE CONTROL OF VENEREAL DISEASES

Be it Ordained by the Board of Commissioners of the City of Charlotte, N. C.:

SECTION 1. That it shall be unlawful for any person to expose another to gonorrhea, syphilis or chancroid infection; and every person having either of said diseases shall, promptly upon discovering same, report to a reputable physician of the City of Charlotte for treatment, and shall continue taking treatment until, in the opinion of the attending physician, there is no longer danger of such person communicating such disease.

SEC. 2. That if the City Health Officer shall have reason to believe, by the accusation of another or otherwise, a person has either of the diseases mentioned in section 1, and is not under treatment therefor by a reputable physician, then it shall be the duty of said health officer to give written notice to such person to report, within twenty-four hours from the time of the service of such notice, to a reputable physician in the city or to the health officer, for examination; and if such person shall fail or refuse to comply with such notice and submit himself or herself to an examination, or if any person having either of said diseases shall fail or refuse to take treatment under a reputable physician or the city health officer until he or she is discharged as no longer capable of communicating any of the said diseases, then in either event the said health officer shall place such person under quarantine and placard the home or dwelling place of such person, announcing the presence of the disease with which such person may be afflicted. And it shall be unlawful for any person to remove such placard until the same is ordered removed by the health officer.

SEC. 3. That it shall be unlawful for any person except a regularly licensed physician to prescribe or to give any medicine for the treatment of persons afflicted with any of the diseases mentioned in section 1: Provided, however, that any one who applies to the City Health Department shall be given such medicines and treatment free of charge.

SEC. 4. That every druggist or other person who sells any drug, compound, specific, or preparation of any kind used for or believed by the druggist or person selling same to be intended to be used for the treatment of any of the said venereal diseases, shall keep a record of the date of such sale, the kind and quantity of medicine sold, and the name and address of the person making such purchase. Such record of said sales shall at all times be open to inspection by the city health officer.

SEC. 5. That it shall be unlawful for any person to post or cause to be posted any hand bills or printed matter in the city advertising any remedy for the treatment of any venereal disease.

SEC. 6. That it shall be the duty of the chief of police to have examined by the city health officer or other reputable physician all inmates of the city jail whom he may suspect of being afflicted with any venereal disease.

SEC. 7. That it shall be unlawful for any person having any of the diseases mentioned above to use, while in the infective stage, any public drinking glass or vessel, or to work in any place where any food or drink is handled.

SEC. 8. That any person, firm or corporation violating or failing, refusing or neglecting to comply with any provision or requirement of this ordinance shall, upon conviction, be fined not less than ten dollars nor more than fifty dollars, or be imprisoned not exceeding thirty days.

Police Coöperation. Unless we can get the individual policeman to see that it is his patriotic duty to help in this crusade, our work will be more difficult and less efficient. The plain clothes man and the mounted officer are essential in running down the jitney prostitute.

Government Coöperation. The army has appointed zone officers, who are in charge of the venereal work, around the camp, in coöperation with the Public Health Service and civil authorities. The provost

guards watch the suspicious localities and the soldiers are examined regularly for infection and kept in camp if diseased. A social sheet is prepared, giving when possible the source of infection, and this information is sent to the local health officer. The Public Health Service has established free clinics in all the cantonments, and are actively engaged in publicity work. The Council of National Defense furnishes the necessary literature, and the Fosdick Commission is paying for probation officers. So you see, practical work has begun, but it must be made state-wide to be effectual.

Prostitution. At the beginning of the war the prostitute had fortified herself in her citadels, the red-light districts and waged a very successful fight, but thank God! these places have been closed in every cantonment area, but she has simply changed her method of warfare; she has now resorted to shell-hole fighting, using hotels and restaurants, when as chambermaid or waitress, with bell boys and porters for escorts, she is hard at work. In many places she has been compelled to retreat again, and she has now resorted to Indian warfare, having taken to the pines with the jitney driver for her escort. In order to lessen this peril, stringent ordinances must be passed and outside patrol must be maintained. Detention homes and reformatories must be established for these creatures, the majority of whom are feeble-minded, and every effort made to bring this drifting element back to a normal life. They must not be driven from one town to another.

Prophylaxis. This measure should be used as a last resort. Every effort should be made to stamp out the disease. Moral education carried the fullest extent and then require in the army every prophylaxis to take care of the man that cannot be reached by the moral campaign. I do not believe in advocating prophylaxis for the civil population, as it is simply an encouragement to vice and immorality. If we tell the young man that by using certain methods immediately after intercourse that there is very little danger of infection, then we turn loose upon the community a dangerous element. Prophylaxis to be effective must be practiced at once. The statistics of the United States Navy show that when used within one hour, the percentage of infections is .08, and that after twelve hours the method is of no use. I believe that the prophylactic station, if properly conducted, will do some good in the army, if the proper man be placed in charge. He has a splendid opportunity for heart to heart talks with the men, and can probably save many thoughtless young soldiers from further chances of infection.

In conclusion, I am going to appeal to you to get every physician in the glorious old State of North Carolina to get behind this movement and do their duty for victory and humanity.

THE MEDICAL SIDE OF A MILITARY BASE HOSPITAL

THOMAS MCCRAE, M.D.
Professor of Medicine, Jefferson Medical College, Philadelphia

It is a great compliment to be asked to present a paper before the North Carolina Medical Society in which I have so many friends. I have been much interested in observing the students who come from your State. Each year a number of them enter the Jefferson Medical College, and I desire to bear testimony to the excellent character of their training. The men who enter the third year from the University of North Carolina are excellently prepared, and have done very well in their final years work with us.

We are all interested in war conditions, and it is my desire to bring before you some impressions of the medical side of the work as seen in a base hospital abroad. There is an impression that medicine counts for little in the present war. Naturally surgery is more spectacular, and the surgical horns are more loudly blown. But if we consider the whole field there is no comparison as to the amount of useful work done by the two services. As regards the question of prevention, we have an enormous saving of lives, as seen for example in the prevention of typhoid fever. In the base hospitals there is as a rule as much medical as surgical work, and in some parts of the year a great deal more. The worker in medicine has fully as much to do as the surgeon in keeping up the efficiency of an army and getting a disabled man back to a fit condition for duty.

If you asked me as to which special groups of workers had the best chance to be of use in this war, I should say the neurologist and orthopedic surgeon. You may perhaps wonder at the first, and I have heard men say, "Why have a neurologist in a hospital unit?" Consider the number of wounds of the head, spine and nerves, and you have part of the answer. When should operation be done on an injured nerve? When is a nerve divided and when only injured without division? These are problems which only one carefully trained in neurology may be in a position to answer. The trend in neurology in recent years seems to have been away from the production of the man trained, we may say, in the organic side of the subject. This war has brought organic neurology to its own again. Then consider the large number of neuroses which require the most skillful handling. As regards orthopedics, I

should place the matter of prevention of deformities as the first thing in their work. Prevention is most important, and our usual training does not give very much idea of this. The United States Army will be tremendously aided by the American orthopedic surgeons who have been working with the British forces for over a year past. Their work has been of the greatest value and has received the highest praise.

If you ask in what lines medical knowledge has been advanced as a result of the war, there are a number of points to be noted. The study of the paratyphoid fevers has added much to our knowledge of this group. At the onset of the war the soldiers were protected against infection by the typhoid bacillus, but not against the paratyphoid strains. As a result there were many more cases of paratyphoid than of typhoid fever. The Spanish-American War added much to our knowledge of typhoid fever, and this war has done as much for the paratyphoid group. Then much has been learned of tetanus, particularly as regards the local forms and the tendency to recurrence at an interval after the original attack, especially if any surgical procedure is undertaken. Our knowledge of the meningococcus and its various strains, with improved methods of diagnosis, have resulted from the work of British investigators. The different forms of jaundice have had much investigation, and the study of the various forms of dysentery has been fruitful.

I have often been asked what diseases there are to deal with in the medical wards. One may answer that the material is much the same as in a civil hospital with the addition of the special war diseases. There are, however, some exceptions. One suddenly realizes that there is very little arterio-sclerosis and chronic nephritis and that malignant disease is rare. Comment should be made on the infrequency of syphilis among the general hospital material. It was a constant surprise to me to discover how little there was. We did not have active cases admitted, but of the later stages there was less than in any ordinary civil hospital. This was the experience of a medical service of 1000 beds. There have been many very foolish statements made as to the prevalence of syphilis among the troops. I can only say that its infrequency among the British and Canadian troops was surprising to me.

Certain ordinary diseases are worthy of mention. Bronchitis is very common and often of rather a servere form which clears slowly. You can imagine how this increased the difficulty in making a diagnosis of early tuberculosis. Many of the patients with bronchitis had fever, bloody sputum, and were generally "knocked out." It is easy to see how a diagnosis of tuberculosis would be suggested. This prevalence of bronchitis might be considered by those who go about insisting that the man with an apparently healed tuberculosis is good material for front

line work. It seems to me a most pernicious doctrine which represents the trenches as a sort of good health resort for the former tuberculous individual. Men with any form of pulmonary or bronchial disease are not good material for the front line. The patient with emphysema seems to be particularly subject to bronchial disease, as we should expect, and the same applies to mouth breathers.

The special war diseases are worthy of some mention. One disability which is frequently seen is gas poisoning. There are various kinds employed, but the majority seen by me had been gassed by what is popularly known as "mustard gas." This is irritating and causes a variable amount of damage. The most severe results are in the larynx, with the production of varying grades of change from acute to membranous laryngitis. With this there may be tracheitis and bronchitis, but usually without much in the way of physical signs. Inhalations of benzoin and the giving of heroin to ease the cough usually gave good results. When lesions of the larynx were present local applications were also helpful. Aphonia persisting for variable periods is common in this form of gassing. Others had much conjunctival irritation with photophobia, and in a few cases a corneal ulcer resulted. This photophobia is responsible for the accounts of men being "blind" for some days. But by far the most striking lesions were on the skin. The gas is very irritating and especially when the skin is moist. It causes an acute dermatitis with resulting blebs and these are termed "gas burns" by the men. Many of them had the lesions especially on the genitalia and about the axillæ. Others had a most remarkable pigmentation, distributed in a very irregular way. Some had a rapid desquamation so that the skin of the whole front of the trunk would peel off in one or two days. The gassed patients whom I saw recovered rapidly, and so far as the evidence went were not left with any permanent disability.

The estimation of the degree of disability of many of the gassed soldiers is going to prove a difficult task. This applies more especially to some of the other forms of gas. Men who seem normal in every way to the ordinary methods of examination yet have a disability which is real. Some undoubtedly are affected psychically. In others there is a disturbance in the respiratory mechanism. In some this may be in the respiratory centre, but in others there is some alteration in the gaseous exchange in the lungs. Something has occurred to lessen this for a time at any rate, but how permanent this is we do not know as yet.

Trench fever is a disease which appears to be new, although in some particulars it seems to resemble the descriptions of dengue. It is characterized by a period of fever lasting for some days followed by an afebrile period, after which there are recurrences of fever which last for

a short period only, usually about twenty-four hours. The recurrences average in number from two to five, and generally at intervals of five to seven days. The patients suffer from very severe pain which is referred particularly to the shins, but may be in the muscles and tendons. It is usually worse at night. The pain persists after the elevations of temperatures have ceased. The cause is still unknown, but the mode of transmission is by lice.

War Nephritis. This is also a puzzle in many ways. Take a single case and you can duplicate it in civil life, but no civil hospital has a number of men showing the particular picture that these patients present. The onset is usually acute, it may be with edema, often noticed by others before the patient feels any symptoms, or the patient suffers from dyspnea and weakness. There is some fever, marked headache, and considerable edema. Under treatment the edema, headache and malaise may disappear quickly, but the urinary changes persist. The most striking of these is the occurrence of blood which sometimes persists for long periods, often after the man feels perfectly well. Uremia is not rare, but does not seem to be particularly dangerous, and curiously enough in the men who have uremia, the nephritis usually cleared up rapidly. As regards blood pressure, some of these patients showed great variations during the day with a tendency for the pressure to rise towards evening when headache often came on. We do not know the ultimate prognosis, but some of them will undoubtedly be left with a chronic nephritis.

A frequent cause of disability is the condition usually designated Disordered Action of the Heart and termed D. A. H. for short. This group may be said to include those cases in which the usual methods of examination fail to show any evidence of cardiac disease, but the patient complains of marked symptoms, the features being largely subjective. The condition occurs particularly in the younger soldiers. The main subjective features are palpitation, dyspnea, dizziness or giddiness, rapid fatigue and a complaint of pain usually referred to the heart. On examination the feature which impressed me the most was the general picture of nervous disturbance. The patients were easily upset nervously, showed marked vasomotor disturbance, very often sweating, and usually an increased pulse rate. This last was frequently only brought out by exertion or excitement. One point in which I was particularly interested was the condition of the pupils. In the great majority dilatation was not present. Physical examination of the heart usually reveals very little. A few show extra-systoles, but this is the exception. In a certain number of cases the condition seemed to be that of the so-called "drop heart," in which it is lower than normal, situated more

in the middle line and smaller than normal. Special interest belongs to the etiology and there is no agreement as to this. Probably many factors are concerned in different patients. The condition does not differ in any way from what one sees occasionally in civil life. There one would inquire particularly regarding three things: (1) the occurrence of nervous strain; (2) disturbance in the sexual sphere, and (3) tobacco. It is evident that the first is very common in the soldier, the second does not seem to play a large part, and, as to tobacco, it is difficult to speak. Naturally one has to take other causes into consideration, such as infection (probably of minor importance), overstrain (a good word to use because indefinite, but not in evidence actually), hyperthyroidism (a tempting hypothesis, but one which lacked evidence in the vast majority of cases seen by me), and toxemia (also a useful word, but of indefinite meaning).

The impression which these patients gave me was that nervous disturbance played the largest part, with infection responsible in some cases. Particular interest belongs to the effect of tobacco. My own feeling is that this plays a large part, at any rate in keeping up the symptoms when once begun. There is a very heavy use of tobacco, usually as cigarettes, and many of the men smoke 30 or 40 a day. On going into the histories carefully one found that a certain number used only small amounts of tobacco, and at first this might speak against its influence being important. But on close questioning it was found that the reason they smoked very moderately was that they could not smoke any more without marked disturbance. In other words, they had a hyper-susceptibility to tobacco. In such cases it is difficult not to feel that tobacco plays an important part. It certainly does in similar cases in civil life.

In handling these patients it is important to recognize those due to infection as rest is indicated for them. In the majority of the group carefully increased graduated exercises are best. They are certainly better without tobacco.

The neurological cases are numerous. The decision as to operation in those who have wounds of the skull, spine, and nerves offers many difficulties. It is so easy to make matters worse instead of better. A man has a bit of shrapnel in his head; is it better left alone or removed? The number of cases of injury of peripheral nerves is large, and the decision as to operation requires very careful study. The problem of infection enters into it all for a previously infected area is not the best place for subsequent operation. On the other side of the house are the cases of war shock. There are various groups of these cases, and they cannot be put in to one category. The closer to the front they are handled the

better the chance for prompt recovery. Every mile of travel tends to aggravate the condition. It will be interesting to see how the careful studies made of the men of the American Army and the rejection of the nervously unfit will affect the incidence of war shock. It should prove of material advantage. Much should be gained by instruction as to what "war shock" is, for many men go to the front expecting something mysterious to happen if a shell bursts near them, other than being wounded. The mechanism of war shock is not difficult to understand, and the unfortunate term "shell shock" has been a predisposing factor. It should be dropped.

The personal side of the work is most interesting. My patients came from Great Britain and Ireland, Canada and Australia. The study of the types was a constant delight. They were alike in their spirit and attitude. The men who might have been allowed to be "grouchy" as having some excuse, were usually the most cheerful, and I shall always remember a man who had lost both arms and both legs. He was a true Mark Tapley. One could not but feel the tremendous debt which you and I owe to these men. Their patience under pain and suffering is beyond all praise, and we can feel that the representatives of the United States will prove worthy comrades in this as in other ways. I occasionally ran across Americans who had enlisted in the Canadian Army. There are not 100,000 of them, however, as is often stated. There were about 12,000 in all. My having lived in Baltimore had given me some knowledge of the accent of the different Southern States. One day on my rounds a man answered with an unmistakable Virginia accent. I asked him "What part of Virginia are you from?" He answered at once without thinking, and then gradually the puzzle dawned on him as to how I knew he came from Virginia. My uniform was of the Canadian forces, and he was much mystified as to how his state could be known.

Too much cannot be said in praise of the medical care given to the soldiers of the British Empire, and it is a satisfaction to know that the United States medical services will be equally good. This must be a great comfort to all of us, and particularly to those who have relatives and friends in the service.

THE TREATMENT OF INFECTION AND INFECTED WOUNDS WITH THE CHLORINE ANTISEPTICS

Captain Walter E. Lee, M.R.C., Philadelphia

The appalling virulence of the infections which was encountered in the gunshot wounds, during the early months of this war, was an entirely new experience for the present generation of surgeons. Similar conditions, we are told, were presented to the surgeons who served in the Civil War, and text-books written before that time contain detailed instruction for the treatment of the suppuration which was always present in every wound—present in such severity as to be the most important factor, not merely in the healing of the wounds, but in the recovery of the patient.

Lister's discovery, in 1867, of the bacterial origin of surgical infection, together with the methods he devised to prevent the introduction of bacteria into operative wounds and to destroy those which had gained entrance into traumatic wounds, was the beginning of the Antiseptic Era in Surgery.

Very definite objections to the use of such strong chemical agents as the carbolic acid solutions of Lister handicapped the antiseptic method from the very beginning. The most vital of these objections was the fact that these chemicals destroyed the animal cells of the living tissues just as readily as they did the vegetable cells of bacterial life. Von Bergmann, in the early eighties, developed a method of sterilizing surgical materials, which employed heat for the destruction of bacteria. He demonstrated that with boiling water and steam under pressure the bacteria upon all the instruments and materials used in a surgical operation could be destroyed without resorting to chemical agents.

With this Aseptic Method it was possible to obtain the same degree of sterility and yet avoid the introduction into operative wounds of the destructive chemicals used by Lister on his instruments and dressings. But it was, however, in the treatment of infection and infected traumatic wounds—where it was necessary to directly apply the antiseptic to the human tissues, that the greatest harm was produced by these chemical agents.

With the appreciation of this tissue destruction, which always followed the use of antiseptics, surgeons gradually diminished the strengths in which they used them until a point was reached where they found that they were practically without any germicidal effect. The fact that the rate of wound healing consistently increased with the decrease in the

strengths of the antiseptics employed, suggested that the human tissues themselves possessed a very definite natural resistance to infection, which, in the majority of cases in Civil Surgery, was entirely adequate to control the small mass of infection present in such wounds.

Thus in 1914 surgeons had come to depend upon an "aseptic" technique for the prevention of the introduction of infection into their surgical wounds, and, almost entirely upon the natural resistance of the body tissues in the treatment of infections and suppuration. At this time they had practically abandoned the use of and search for a general antiseptic and were devoting their energies toward the development of specific agents of which the use of salvarsan in the treatment of syphilis was an example.

But when those civil surgeons, trained in this era of surgical asepsis and antiseptic nihilism, were confronted with the massive wounds and overwhelming infections of the present war, they found their methods totally inadequate to prevent or control infection or suppuration in these gunshot wounds. Their early efforts to treat these wounds by the methods they had so successfully employed in civil wounds were uniformly disastrous and, naturally, their first reaction was to return to the search for an ideal general antiseptic agent.

In this renewed search for the best general antiseptic, many and varied agents have been used, and for a long time, the comparative germicidal values of these substances were hopelessly confused. It was not until surgeons understood the real factors in the prevention and control of infection in gunshot wounds that the apparently irreconcilable reports of different observers could be interpreted.

At the present time military surgeons are agreed that the vital factors in the problem of the prevention and control of infection in traumatic wounds are:

1. The interval of time elapsing between the receipt of the injury and of the surgical treatment. Traumatic infection of tissues is confined to the exposed surfaces of the wound, during the first three hours, and it is possible to mechanically remove this infection by adequate surgical treatment during this period of contamination in a large majority of the cases.

2. The completeness with which the foreign bodies and the unusual mass of devitalized tissue, peculiar to gunshot wounds, and to a lesser degree to traumatic wounds, are removed by surgical means.

3. The degree of asepsis with which this primary operation is performed.

The experience of the surgeons of the American Ambulance during the last two and a half years, with over 5,000 cases, is entirely in accord with

that of the majority of surgeons who have served in the present war, namely, that the chlorine preparations have proven superior to all other germicidal agents. It is really revolutionary, from the laboratory point of view, that chlorine should be found to be applicable, in any form, for the treatment of infected wounds, for chlorine is a general disinfectant, and, as such, it is to be expected as destructive to tissues as to bacteria. It is an agent which destroys everything it comes in contact with, unless very carefully controlled, and, before Dakin developed his unique method of control, decidedly unfortunate results followed the attempts to use such standard preparations as Eau de Javal and Labarraque's solutions.

Dakin, while experimenting at Compiegne in 1914, found that a very dilute Labarraque's solution, containing no more than a 5 per cent of hypochlorite, would not destroy the living animal cells in the tissues of wounds. The germicidal value of such a dilute solution was, of course, very far from that required to destroy the massive infections in their gunshot wounds, but he suggested that the same principle of fractional sterilization, which has for years given satisfactory results in the sterilization of surgical dressings by heat, could be employed for the sterilization of infected tissues with this weak chlorine solution.

Dakin found that by applying this dilute neutral Labarraque's solution every two hours, a progressive fractional sterilization was accomplished in infected wounds without any of the tissue destruction which had limited the use of the standard chlorine preparations. Carrel and Dehelley devised a hydraulic system of rubber tubes and reservoirs by means of which these weak solutions could be carried to every portion of the basin-like wounds, they prepared, and into which fresh solutions could be instilled every two hours.

With the use of this modified Labarraque's solution of Dakin, applied with the technique developed by Carrel and Dehelley, a progressive fractional sterilization of infected wounds was obtained by the surgeons of the American Ambulance that was far more satisfactory than had ever been obtained by them with any other means in civil or military wounds. The unusual expense for the dressing materials, the metriculous asepsis at the primary operation and at all subsequent dressings of the wound, the painstaking and time consuming care of the chemist, bacteriologist, nurses and orderlies required for this method of treatment, was felt to be fully justified by the unusual results obtained.

Upon our return to civil surgery in America it was found that this method of progressive fractional sterilization of infected wounds with Dakin's hypochlorite solution, when applied in the treatment of civil and industrial wounds, gave results similar to those we had obtained in our war wounds. However, it was a debatable question, whether, in the

smaller and less virulently infected wounds of civil and industrial life, the slight betterment in results justified, from an economic standpoint, the increased expenditures in material and time of the surgeon and nurse, required for the proper application of this method of treatment.

The unusual mechanical and economic conditions required, together with the annoying skin irritation, which still too frequently followed the progressive fractional sterilization of wounds with weak chlorine solutions, had prompted Dakin to further experimentation. The fact that the irritation following the use of hypochlorite solution was confined to the skin, and never occurred in the wounds, resulted in his examining the chemical changes which followed the application of chlorine solutions to the tissues. He found that the hypochlorite solutions, when in contact with the proteins of the wound exudate, split the proteins, the amino groups of which (NH_3) would then unite with the active chlorine of the hypochlorite solution to form substances containing the HCL group which are known chemically as chloramines. The rapidity with which this chemical process takes place in wounds, five to seven minutes, means that the irritating free chlorine of Dakin's solution is present in the wound but a few moments every two hours in the method of progressive fractional wound sterilization, while if it comes in contact with the surrounding skin, free from protein or anything else to modify or neutralize it, the dreaded phenomena of chlorine irritation are produced. Dakin found that these chloromines were nonirritating to the skin as well as to the wounds.

The next step was perfectly obvious. If the acting germicidal agent is a nonirritating chloramine and chloramines can be made synthetically, it should be possible to use synthetic chloramines in the treatment of infections and avoid entirely the skin irritation encountered when chlorine solutions are used to produce the chloramines in the wound, even when carefully controlled by such an accurate method as that of Dakin's progressive fractional sterilization.

The first synthetic chloramine to be used by Dakin was a sodium salt of toluene-para-sulphon-chloramide or, as he called it, Chloramin-T. This synthetic chloramine was nonirritating to the skin and wounds and was used in aqueous solutions, of from two to four per cent, to produce a progressive fractional sterilization by some such hydraulic system as devised by Carrel and Dehelley.

The problem presented in the sterilization of the naso pharynx of disease carriers, upon which Dakin was next engaged, did not present such favorable conditions for progressive fractional sterilization as was found in wounds. It was difficult to devise a method that would keep aqueous solutions at all times in contact with the vertical surfaces of the

naso pharynx, and the constant to and fro passage of air currents over these surfaces caused all watery solutions to rapidly evaporate. It was desirable to have a solvent which would carry a large mass of germicide and that would hold it so firmly in solution that it would be slowly diffused into the surrounding tissues for the greater part of twenty-four hours. Oils were experimented with and finally a chlorinated eucalyptol was chosen as the solvent for a dichloramin-T (chloramin-T being only soluble in water).

The experimental success Dakin obtained in the sterilization of the naso pharynx with this oil solution suggested to us that it could be just as effectively used in the treatment of the accessible infected surfaces of superficial wounds and clinical results have more than fulfilled our expectations. At the time this clinical test of the use of dichloramine-T in chlorinated eucalyptol was started, it was generally believed that disinfectants in oils were useless, and curiously this view is still maintained by a few. This idea was based upon an observation by Koch, who found that carbolic acid, a strong germicide in water, was much reduced in activity by solution in vegetable oils. These experiments were accepted as a basis for the generalization that disinfectants in oil were quite useless.

The work with dichloramin-T has shown that this generalization is incorrect and that oily solutions can be expected, not only in the instance of dichloramin-T, but in other instances, to do a great deal that water solutions will not do. Observations by Prof. A. D. Richards, and Mr. McMaster, during the summer of 1917, have shown that carbolic acid is less active as a disinfectant if dissolved in water than in mineral oil. The whole question of disinfectants which are soluble in oil will have to be gone over again.

It was demonstrated clinically during the early months of the experiment that as good results were obtained from one application every twenty-four hours of a five per cent oil solution of dichloramin-T to accessible superficial wounds, as by the second hourly application of the hypochlorite in the progressive fractional method of wound sterilization. Expressed in the number of days required for healing the results with dichloramin-T were 16.3 per cent better than was obtained with the hypochlorites.

These clinical results have recently been entirely confirmed by bacterial studies made in infected wounds in living tissues by Dr. Perkins at the Pennsylvania Hospital.

The use of oil solution of dichloramin-T did not long remain confined to the prevention and control of infection in superficial wounds. By means of rubber catheters, glass canullæ and syringes it has been possible

to carry the antiseptic to the deeper tissues and whenever actual contact of the germicide with the infected tissue can be accomplished our experience has shown that it is the most efficient antiseptic that we possess at the present time. The success with which this contact can be obtained is indicated by the fact that during the last four months no hypochlorite solutions have been used in the Pennsylvania Hospital.

This experimental work has continued over a period of twelve months, and at the present time we have the records of 14,628 completed cases of infections and infected wounds treated with dichloramin-T.

The conclusions expressed in the preliminary report in June, 1917, can be repeated, at this time with the confidence coming from a larger experience:

1. That with the chlorine group of antiseptics we have been able to obtain, in the treatment of infections and infected wounds, better results than with any other agent.

2. That with dichloramin-T we have been able to obtain as good results in the treatment of accessible infections as with Dakin's hypochlorite solution applied with the Carrel-Dehelley technique.

3. That in the use of dichloramin-T it is unnecessary to abandon the surgical principle of dependent drainage of infected cavities as is essential in the proper application of hypochlorite solution by the hydraulic method.

4. That only a minimum amount of dressing material, time and personnel are required when using dichloramin-T. A saving of 75 per cent in dressing material has been our experience during the twelve months work at the Pennsylvania Hospital.

PROCEEDINGS OF THE HOUSE OF DELEGATES

PINEHURST, N. C., Wednesday, April 17.

The House of Delegates was called to order by the President, Dr. I. W. Faison.

The following county societies responded to the roll call:

Society	*Delegate*
Bertie	Dr. L. B. Evans
	Dr. F. H. Harris
Bladen	Dr. E. S. Clark
Buncombe	Dr. E. B. Glenn
	Dr. J. B. Greene
	Dr. D. E. Sevier
	Dr. W. L. Dunn
	Dr. M. L. Stevens
	Dr. O. F. Eckel
Burke	Dr. John McCampbell
	Dr. I. M. Taylor
Camden-Pasquotank-Dare	Dr. Zenas Fearing
	Dr. H. D. Walker
Chatham	Dr. Ben. H. Hackney
Cherokee	Dr. S. C. Highway
Davidson	Dr. M. A. Bowers
	Dr. D. J. Hill
Franklin	Dr. J. E. Malone
	Dr. S. P. Burt
Gaston	Dr. H. F. Glenn
	Dr. L. N. Glenn
Guilford	Dr. W. P. Beall
	Dr. J. T. J. Battle
Haywood	Dr. J. R. McCracken
	Dr. J. H. Way
Hertford	Dr. L. M. Futrell
	Dr. J. A. Powell
Hoke	Dr. L. B. McBrayer
Iredell-Alexander	Dr. M. R. Adams
	Dr. T. E. Anderson
Johnston	Dr. J. B. Person
McDowell	Dr. B. L. Ashworth
Martin	Dr. J. H. Saunders
	Dr. W. E. Warren
Montgomery	Dr. Hughes B. Hoyle
	Dr. J. B. Shamburger
Moore	Dr. J. H. Matthews
	Dr. A. A. McDonald

Society	*Delegate*
Onslow	Dr. L. D. Bryan
	Dr. A. R. McCuiston
Randolph	Dr. J. V. Hunter
	Dr. T. I. Fox
Richmond	Dr. A. C. Everett
	Dr. F. J. Garrett
Rowan	Dr. John Whitehead
	Dr. B. O. Edwards
Surry	Dr. R. E. L. Flippin
	Dr. H. B. Rowe
Tyrrell	Dr. B. F. Halsey
Washington	Dr. W. H. Ward
Watauga-Mitchell	Dr. C. A. Peterson
	Dr. G. W. Bradshaw

The following were named as members of the House of Delegates from their respective districts:

Society	*Delegate*
First District	Dr. J. L. Spruill, Columbia
Second District	Dr. K. P. B. Bonner, Morehead City
Fourth District	Dr. E. T. Dickinson, Wilson
Fifth District	Dr. L. B. McBrayer, Sanatorium
Sixth District	Dr. N. C. Daniel, Oxford
Seventh District	Dr. J. P. Munroe, Charlotte
Eighth District	Dr. A. Y. Linville, Winston-Salem
Ninth District	Dr. D. J. Hill, Lexington
Tenth District	Dr. D. E. Sevier, Asheville

Motion that Dr. E. J. Wood be named delegate for the third district; motion seconded; carried.

TREASURER'S REPORT

April 15, 1917, to January 1, 1918

Balance as per report April 15, 1917	$1,653.09
Dues	513.00
Interest	24.88
Total	$2,190.97
Disbursements	1,153.84
Balance January 1, 1918	$1,037.13

JANUARY 1, 1918 TO APRIL 11, 1918

Balance from 1917	$1,037.13
Dues	1,780.00
Interest	12.96
Total	$2,830.09
Disbursements	1,117.75
Balance April 11, 1918	$1,712.34

ITEMIZED DISBURSEMENTS

APRIL 15, 1917, TO JANUARY 1, 1918

1. Miss Josephine Tonnoffski (account rendered)	$ 80.50
2. Oxford Orphan Asylum (printing stationery, etc.)	110.35
3. William M. Jones, M.D. (salary and postage)	156.24
4. Benjamin K. Hays (salary as secretary)	600.00
5. Benjamin K. Hays (incidentals)	6.00
6. Miss Mary E. Banks (reporting Asheville meeting)	20.00
7. Edwards & Broughton (reprints, Dr. J. W. Long's paper)	21.00
8. Oxford Orphan Asylum (circular letters to hospitals and printing post cards)	3.00
9. M. Saliba (account rendered)	5.25
10. Miss Josephine Tonnoffski (services and advanced cash)	151.50
Total	$1,153.84

JANUARY 1, 1918, TO APRIL 11, 1918

1. Edwards & Broughton (part payment on account, printing transactions)	$1,000.00
2. Oxford Orphan Asylum (printing)	2.50
3. Oxford Orphan Asylum (printing letters and post cards)	15.25
4. Benjamin K. Hays (cash advanced for stamps)	50.00
5. E. C. Register (reprints, Dr. Hays' paper)	50.00
Total	$1,117.75

DUES ITEMIZED

April 15, 1917, to January 1, 1918

Alamance	$ 2.00
Ashe	6.00
Beaufort	18.00
Bladen	14.00
Buncombe	2.00
Caldwell	8.00
Carteret	4.00
Caswell (1918)	3.00
Chatham	8.00
Cherokee	2.00
Chowan and Perquimans	6.00
Cleveland	2.00
Duplin	2.00
Durham and Orange	82.00
Forsyth	2.00
Guilford	12.00
Hertford	$ 10.00
Haywood	2.00
Madison	20.00
Mecklenburg	118.00
Moore	18.00
New Hanover	44.00
Onslow	2.00
Person	24.00
Pitt	2.00
Rockingham	8.00
Rowan	38.00
Rutherford	8.00
Sampson	2.00
Union	8.00
Wayne	36.00

January 1, 1918, to April 11, 1918

Ashe	27.00
Avery	21.00
Bladen	24.00
Buncombe	174.00
Burke	42.00
Caldwell	3.00
Chatham	30.00
Cherokee	24.00
Cleveland	45.00
Columbus	3.00
Craven	12.00
Cumberland	45.00
Davidson	60.00
Davie	12.00
Duplin	27.00
Durham and Orange	102.00
Franklin	33.00
Granville	3.00
Harnett	45.00
Hoke	33.00
Henderson and Polk	33.00
Iredell and Alexander	18.00
Jackson	6.00
McDowell	15.00
Martin	33.00
Mecklenburg ('06-7)	4.00
Montgomery	24.00
Moore	39.00
Nash	57.00
New Hanover	60.00
Northampton	33.00
Onslow	21.00
Pamlico	9.00
Pasquotank, Camden, and Dare (1-1917)	50.00
Randolph	30.00
Richmond	3.00
Robeson	18.00
Sampson	27.00
Scotland	27.00
Stanly	30.00
Stokes	3.00
Surry	64.00
Swain	21.00
Union	45.00
Wake	166.00
Washington and Tyrrell	14.00
Wayne	48.00
Wilkes	24.00
Wilson	60.00

The amendment to the Constitution as introduced at the last session was brought up and on motion unanimously adopted.

The said amendment is as follows:

Resolved, That Article VIII, sec. 1, of the Constitution be amended by striking out the second comma and the word "a" following it, in second line, and inserting in lieu thereof a dash, so that the phrase "a Secretary, a Treasurer" will read, "a Secretary-Treasurer."

Resolved, That Article XIII, sec. 2, be amended by striking out the comma in line two and inserting in lieu thereof a dash, so that the phrase "the Secretary, Treasurer" shall read, "the Secretary-Treasurer."

The amendment to the By-laws, which was introduced at the last session was taken up and unanimously adopted.

The amendment to the By-laws is as follows:

Resolved, That wherever the word "Secretary" or the word "Treasurer" occurs in the By-laws of this Society, each and every of the said words shall be made to read "Secretary-Treasurer."

Motion that Secretary-Treasurer shall receive the same compensation that the Secretary now receives; motion seconded; carried unanimously.

Motion that men in the service be made Honorary Members of the Society.

Dr. L. B. McBrayer: The Constitution provides who shall be Honorary Members of the State Medical Society, and it does not cover this point. I am quite sure it would be absolutely impossible for us to make the men who are with the colors, or who may hereafter join the colors, Honorary Members without changing the Constitution or the By-laws.

Second, you take Dr. Laughinghouse, Dr. Long and Dr. Way, and a good many such men as that that I could mention; quite a number, who never fail to attend a meeting of the Medical Society and have never failed since they have become members. I happen to know that Dr. Way has a complete set of the Transactions of the Medical Society from the time it was organized, and I think Dr. Laughinghouse has also. These men would be distressed if they were to lose a copy of the Transactions. I think the thing to do, as has been done in Hoke, which has sent twenty per cent of her membership to the war; we have ten members, and we have sent two of them to the war. The Hoke County Society has paid their dues for them and their Transactions are mailed just the same. I move as a substitute that the Medical Society of the State of North Carolina recommend to the county societies throughout the State of North Carolina that they pay the dues for those who are with the colors or who may hereafter go with the colors.

Motion seconded.

The question was called for, the substitute for the original motion was put and unanimously carried; the motion was then put and unanimously carried.

Dr. Benjamin K. Hays: I would like to make a statement. The very high cost of last year's Transactions, which was more than double any other Transactions, was due to the high cost of everything in printing and the large number of pictures published in it. The cost of the book was $2,700 and the total income of the Society is about $2,200. We forget sometimes that we carry upon our roll one hundred Honorary Fellows, who receive the Transactions and pay no dues. The Transactions will cost us not less than $1,800, probably not over $2,400. Supposing the Transactions cost $2,000, the Secretary's salary is $600, the Treasurer's salary $150. We have here three reporters, and the sum total of the cost of those three reporters. They not only have to be paid for the time spent here, their hotel bills, but they must write to the doctors, do the bulk of the work after they return to their homes, so that the sum total of the reporters is about $250. Our programs cost about $100, our stamps are about $100, our stationery is about $100, and incidentals, such as paying delegates (this year we want to pay the expenses of some of our visitors), will run our expenses up to about $3,500. We now have about 1,100 paying members, making an income of $2,200. We have changed that to $3.00, and if we still get 1,100 we will have $3,300, which will be the lowest sum we could hope for to meet our expenses.

I wish to move that all illustrations that are published this year, all illustrations of papers that have been read, that the writers of such papers be required to pay for such illustrations.

Motion seconded and carried.

Motion that report be adopted; motion seconded; carried.

REPORT ON HOSPITAL ASSOCIATION

The committee from the North Carolina State Medical Society composed of Drs. J. F. Highsmith, H. F. Long, and Maj. J. T. Burrus, and the committee from the State Nurses Association, composed of Misses Eugenia Henderson, Edith Redwine and Lula West, met at the Guilford Hotel, Greensboro, February 14, 1918, with Drs. Highsmith and Long and Misses Henderson and West present.

It was the sense of this committee that the President of the North Carolina Medical Society appoint a committee composed of not less than four representative doctors, all being members of the North Carolina Medical Society, who shall meet at once, and organize a State Hos-

pital Association, formulating requirements, etc., for membership in said Association.

That we further recommend that the chairman of this committee shall appoint four nurses, who are members of the North Carolina Nurses Association, to counsel with them as to regulations and in formulating the necessary questionnaire to be sent to each hospital in the State.

J. F. Highsmith,
Chairman.

(After the close of the session the following letter was sent out from the President's office:)

Jacksonville, N. C., August 20, 1918.

Dr. J. F. Highsmith, *Chairman Committee to Organize State Hospital Association, Fayetteville, N. C.*

My Dear Dr. Highsmith:—In accordance with the report of the Committee on the Standardization of Hospitals to the House of Delegates at the Pinehurst meeting, 1918, you are hereby appointed Chairman of committee to organize State Hospital Association, and the following gentlemen are your associates: Dr. J. M. Parrott, Kinston; Dr. H. F. Long, Statesville; Dr. C. V. Reynolds, Asheville.

The following are the representatives for the State Nurses' Association, appointed by that organization: Miss Eugenia Henderson, President State Nurses' Association, Winston-Salem; Miss E. A. Kelly, Treasurer State Nurses' Association, Fayetteville.

These have all been notified of their appointment, and you will please notify them of the time and place you desire your committee to meet, and proceed as seems wise to you in the performance of the duties assigned you.

Very truly yours,

Cyrus Thompson, *President.*

REPORT OF EXAMINING BOARD COMMITTEE

Your committee appointed to investigate and report on the question of a single examining board in the State for all those who purpose to practice any form of healing, beg leave to make the following recommendations:

1. That it seems desirable for every one entrusted with the care of the sick to possess a certain standard of general education and a fundamental knowledge of the human body in health and in disease, no matter what type of practice is adopted.

2. That in line with several other states it may become necessary to meet the problem of the medical cult by demanding of them, as is now demanded of all regular medical practitioners, the highest educational and professional qualifications.

3. That the President of the Medical Society of the State of North Carolina be requested to appoint a committee to consider this matter further and that this committee if they deem it feasible, after consultation with the legislative committee of the Society and the Board of Medical Examiners, be empowered to present an appropriate bill to the next session of the State Legislature.

John G. Blount,
Hubert A. Royster,
Committee.

Motion that report of committee be received and approved; motion seconded; carried.

The following are the committee authorized in section 3: Dr. J. F. Highsmith, Fayetteville, Chairman; Dr. H. A. Royster, Raleigh; Dr. J. P. Munroe, Charlotte; Dr. H. H. Newman, Salisbury, and Dr. E. T. Dickinson, Wilson.

The following telegram from Miss Blanche Stafford, Secretary North Carolina Nurses Association, was read:

The nurses of the North Carolina State Nurses Association ask that they be permitted to appoint the nurse members of the North Carolina Hospital Association at their State meeting in June. Best wishes for success of your meeting.

It was moved, seconded and carried that the Secretary be instructed to communicate with the nurses who sent the telegram and advise them of the committee that has been appointed and that the President has instructed Dr. Highsmith, Chairman of that committee, to appoint that committee as per that request.

REPORT OF AUDITING COMMITTEE

Your committee appointed to audit books of Secretary and Treasurer, beg to report as follows:

Expenditures of the treasurer are all properly covered by corresponding vouchers which, however, are far greater in amount than for any year in the history of the Society.

We find that the debts of the Society which are now due and remain unpaid amount to something over $2,400 and the Society has funds to the amount of $1,712 now in bank, $519 collected at this meeting, making $2,231, and about enough in sight, which, when collected, will cancel all accounts to date.

This pays everything up to now and leaves nothing with which to pay

expenses of this meeting and Transactions for this year. The proposition of keeping expenses within the limits of its income confronts the Society. Respectfully submitted,

H. D. Walker.

Motion that report be received; seconded; carried.

Dr. L. B. McBrayer: Mr. President, in view of that report and the limited income of the Society, and the increased expenses from several causes, I move that the Secretary be empowered to secure for the several front pages in the Transactions and for the several back pages in the Transactions advertising of such reputable nature as he may decide to be suitable to go into the Transactions.

Motion seconded.

Dr. J. T. J. Battle, Greensboro: I would like to ask Dr. Hays, as Secretary, if he has given that any consideration; if he has any idea of the income that would bring in.

Dr. B. K. Hays: No, I cannot say.

Dr. L. B. McBrayer: I will say that the idea did not originate with me, but I know there are a great many good, ethical firms that would be more than pleased to advertise, and while I am not advised as to the amount of money that could be had I am of the opinion that we could sell enough space to pay for the printing of the Transactions, which is the great expense of the Society. The Transactions last year, as you know, were very voluminous, and there are a great many illustrations, cuts, but I feel that several of the voluminous papers, for instance, Dr. Burrus's and Dr. Long's, were of such wonderful historic interest that the Society could not afford to abbreviate, so it made the Transactions very, very long. You remember they both had a great many pictures, and while Dr. Hays, as I happen to know because the Sanatorium is there and the James McConnell picture was to be there, the hospital at the Farm-life School, he suggested to the hospitals that they should pay for their own cuts that went in, which I suppose, a good many did, if not all, but in Dr. Long's paper that was entirely impossible. At the same time it was unthinkable to leave any of the pictures that Dr. Long had out of the paper. I believe that this will help to rehabilitate our treasury and I am sure we could get a goodly sum from it.

Dr. I. W. Faison: If you will excuse me I want to go on record as opposed to that idea. While we are in debt and while we need the money, we had better reduce our expense. Our Transactions ought to be clear cut. The idea looks cheap, and I would rather we would even borrow money

and pay interest until we can get out of debt, and check the expenditures until we can get out. I just feel that I cannot agree to that to go until you vote it to go.

Dr. L. B. McBrayer: I am thoroughly familiar with the fact that we have never put advertising in the Transactions before, and I am perfectly willing, so far as I am concerned, to donate $25 toward paying up this deficiency and am ready to give you my check at this moment, provided every other gentleman in this room will do the same thing so as to wipe the debt off and start along without any advertising. It is all right to borrow money; I have borrowed money all my life. It looks like I am going to keep it up all the balance of my life, but it is all wrong to borrow money if you know you ain't going to get the money to pay it back with, and I am as much in favor of holding the purse strings tight as anybody, except Dr. Hays, and to show you that I mean what I say and that I have acted on that principle, I made the request of Mr. Tufts that he take care of the expenses of the stenographers in this meeting, which he has done, but it takes a blessed lot more than that to straighten these things up. The President did not look with favor yesterday on the county societies looking after the $3 dues for the men in the war, and if those 345 men and the hundred others that are going do not pay their dues we are not going to have money enough to run on. I simply mentioned this not because I want it, but because something has to be done and I do not know anything else to do. If any gentleman has any better solution of the situation it will be a great pleasure to me to withdraw that motion and support it.

Dr. J. T. J. Battle: As I understand it, we are at least $2,400 or $2,500 behind. While the money is in sight to almost liquidate that indebtedness, that is the money for the coming year's expenses, so we are at least a year behind.

Dr. L. B. McBrayer: We have been getting behind ever since John Ferrell became Secretary, to my own knowledge.

Dr. Battle: We have already lost 345 men of this Society and the Society will have to make good the annual dues of a great many of these men. Before we shall get together two years from now we will have twice that number out of this Society, and it looks like we are facing a deficiency that will double itself every year. The Secretary, of course, would not allow anything in the Transactions except perfectly reputable advertisements and I really do not see any objection. It would certainly help to take us through the critical period through which we are now passing, and I believe it would be wisdom to carry this motion.

Dr. W. F. Hargrove, Kinston: I do not want to see any advertisement in our Transactions. I am opposed to it. I would rather pay $10 a year than to see it go in. I do not subscribe to the *Charlotte Medical Journal* because it is full of advertisements. I would like to have the *Charlotte Medical Journal,* but I don't take it because it is full of something I don't approve of.

Dr. J. T. J. Battle: Could we have a journal without advertising?

Dr. W. F. Hargrove: I won't subscribe to one until it is taken out.

Dr. Dan E. Sevier, Asheville: While I am opposed to advertising it is now that we must Hooverize, and the only thing I can see for this Society to do will be to get out of the hole as soon as possible. We are going through a world crisis, and we do not know what is in the future for us, I believe it would be the wisest step for this House of Delegates this morning to pass the resolution as offered and then as soon as we get out of debt the House of Delegates can abolish all of this advertising and come back to our normal order. I believe some of the men might contribute to this, but while there is one that would give there are hundreds in the Society that will not give you as much as $5. The business side of the question will be for this delegation to go on record as devising a means that will be ethical and get this Society out of debt.

Dr. G. H. Macon, Warrenton: The *University Magazine* paper and the *Wake Forest Student* let advertising space and I don't see why we should not. The people here in my section are kicking about the fees being $3 now. I reckon they will raise cain when it goes up to $5. I do not see why we should not advertise in the book we write up the Transactions of the Society in. Our standard of education is no higher than is the standard of Wake Forest and the University. Dr. McBrayer's motion is a wise one and I think we should follow his suggestions. We are in the hole financially and Dr. McBrayer's way is the only way at present that I see out of it. I have no hesitancy in saying that I feel sure that we can sell all of the advertising space within a short while; I am nearly certain that firms doing business with the State institutions would buy space. In addition to this we might have to raise the dues of the Society, but not as high if we sell advertising space in the book of Transactions.

Dr. I. W. Faison: It wasn't a matter of looking with favor. It was a matter that the goodly number of the men who run the Society in Mecklenburg are gone, the majority of the men left are not rich men, and I did not know whether they would agree to it, and I wanted the Society to know the conditions.

Motion carried unanimously.

Dr. Benjamin K. Hays: I would like to make this statement. The conditions are really not quite as bad as they seem for the reason that last year we had the most expensive Transactions, more than a hundred per cent than the average, the most expensive, the most elaborate we have ever had, but the dues out of which we paid for that was out of $2. This year our dues will be $3 and if we get the dues in we will have enough to pay the year's expenses. If we get in as many dues as were paid up last year we will get up more than enough to pay the current expenses of this year, which means that we will liquidate last year's debt entirely, and that we will have a little something toward paying the current expenses of this year, and by cutting down the Transactions —there will not be so many illustrations—and by economizing in every way we can, I think we will be able to come out of the hole in a year or so, two or three years.

Dr. J. T. J. Battle: We have not as many members in the Society now as we have had. We are going to have fewer members the next two or three years than we have now, and there is going to be a good many members who are now in the service whose dues will have to be liquidated by the Society.

Dr. I. W. Faison: That was settled yesterday, and you will have to pay everybody's dues in Greensboro that is not here.

Dr. J. T. J. Battle: I am just making some preliminaries. There are some counties that have no organized society and those dues are not going to be paid, so it looks like the financial situation is growing worse, and to hedge in every way possible, I move that the Secretary's salary be reduced from $600 to $300. As the office of Secretary and Treasurer have been consolidated, we can save $450 by that. As the Treasurer said yesterday it did not cost him any time to keep his books as the bank did it, and now is the time for patriotism, and I believe whoever is elected Secretary of the Society will be patriotic enough to do this work for $300, and it won't work any hardship on anybody. I hope it won't. It will certainly be saving to the Society. I, therefore, move that this salary be from now on $300. As I understand it, when the Treasurer's office was united with the Secretary's that was at the same price of $600. I think it would be nothing but wisdom, economy and the exemplification of patriotism on the part of the Secretary to take it.

Dr. L. B. McBrayer: I am more or less familiar with the duties and expenses of the office of Secretary. I happen to know that when Dr. Ferrell was Secretary he was also connected, as he is now, with the International Health Board that he had the best of stenographers that could be

employed in his office, paid for with Mr. Rockefeller's money, and that the work of these stenographers and the postage that was used in correspondence in sending printed matter to the members of this Society amounted to more than twice as much as the $600 that Dr. Ferrell got. That is, if he were sending out a preliminary program, he oftentimes sent out a letter to the physicians all over the State, the preliminary program was stuck in one of these letters, and, therefore, it was legitimate to pay the postage. You will probably remember, I know that many of you will, that ofttimes you have had a one-page leaflet in regard to the work of the Society in one of Dr. Ferrell's letters about hookworm, and nothing but the printing was charged to the Society. There are only a few men, perhaps no other man in the State of North Carolina, that has the office force at his command with somebody else to pay the salary, that Dr. Ferrell has. I know Dr. Hays as I know my own brother, and I know that he does not want anything from the Society for the work that he does, and I am going to ask Dr. Battle to change his motion and make the salary of the Secretary one cipher and then appropriate such amount as may be necessary to employ the clerical help that the office demands.

Dr. Dan E. Sevier: I want to say that unfortunately, I was placed upon that most important committee, I thought at the time, to investigate the salary of the Secretary. I thought when I was first appointed that the salary he was receiving was ample to cover all the expenses of the office, but, after going into it thoroughly, making a painstaking examination of everything, we found with the help that Dr. Ferrell had they were running in the hole. Dr. Ferrell told me that he really would rather not have the position, that the amount we had fixed for it at that time would only pay the stenographer, and I do not believe that there is any man in the Medical Society of North Carolina that is fool enough to undertake this job unless you should do something like Dr. McBrayer has just suggested and fix a salary sufficient to cover the expenses of the actual work that is done. $600 looks like a great sum, but when you go down to paying a stenographer, you cannot get a stenographer that can carry on this work that is satisfactory at a small fee, and I believe we would make a fatal mistake to change it at this time. That was not a salary fixed for one year but it was a permanent salary, until this Society saw fit to change it.

Dr. Benjamin K. Hays: I do not know whether it is in good taste for me to open my mouth, but I rise to make this statement. I have evolved a rather elaborate plan, in event I should remain in the Secretary's office, of personal correspondence between the central office and the various

county organizations, with a view to personal contact, and that was the importance of combining the Secretary's and Treasurer's offices. The Secretary, with the Treasurer off somewhere else, did not have the data to put him in touch. This salary as it stands is about sufficient to pay for that. Whether the salary is raised or lowered or taken away will not affect the man who is in the office, but it simply affects the amount of work done in the office, and this work which I plan cannot be done, unless some man paid for it out of his own pocket, for less than $50. The Secretary gives his time and judgment and planning to the Society for nothing and the clerical work is that which the salary pays for, and, as I said, this work, which is absolutely essential to the carrying out of the plans which I had evolved, cannot be done for less than $50 a month.

Dr. J. T. J. Battle: I am glad to hear the statement from Dr. Hays. I was under the impression that the clerical work, and postage, were paid for as an expense outside the Secretary's salary. That is the way it should be, I am sure.

Dr. Benjamin K. Hays: The clerical work done at the meeting is paid for outside, but the clerical work of the organization throughout the year is paid from the Secretary's salary. The fees that we pay for the reporters for coming here, carrying the work home, sending out the copies to the readers of papers, getting them back, and fixing them for the Transactions, that is extra and above the Secretary's salary. That is not by law but by custom. And the salary of the Secretary is for the work that goes from his office and not the meeting place.

Dr. A. J. Crowell, Charlotte: How about the postage?

Dr. Benjamin K. Hays: The Secretary pays for that. That is over $100.

Dr. J. T. J. Battle: My motive in making this motion was to save the money of the Society, and if Dr. Hays says that will not save any money I do not see any reason for pushing this motion through. I did not know who was going to be Secretary. I had no idea. It was not the man that I was after. If it is not saving anything I am perfectly willing to withdraw the motion.

Second of motion withdrawn.

Dr. Hays: I did not intend to take up this time. I appreciate Dr. Battle's action and I would like to take a minute's time to say just what my scheme is. It is to get a copy of the minutes of every county medical society in the State at every meeting to my office, to find out every man

that is there, every man that reads a paper, every society that is active, how often those societies have their meetings. That is the first. The second is to get out a bulletin, not a journal, a magazine, but simply a printed letter, to send that out from one to four times a year, with data about the workings of the Society, so that the men all over the State will know what is going on in the county and district societies. Third, when these reports come in at the end of the year with a list of names and a check for the money from those men that have paid their dues, to compare that list with last year's list, and see the name of every man in good standing last year, who has left off, and sit down and write that man a personal letter and ask him why he is out of the Society, and in the majority of instances it is merely a matter of carelessness on his part, then to follow that with an investigation of the number of doctors in the county who are not members, write to the county secretary, ask him if those men are desirable. It may be the man is a negro, has been turned out, has applied for membership and has been rejected, so you want to know from your county secretary whether these men are desirable. If you find they are desirable, write a personal letter to those men. I believe this method, put into effect, will increase the income of the Society more than the Secretary's salary.

Dr. I. W. Faison: I have been requested to ask the House to put on the honorary list Dr. T. M. Jordan and Dr. Albert Anderson.

Dr. Benjamin J. Hays: I move that every member who is entitled to honorary fellowship at this time, a paying member for the last thirty years, be placed on the honorary list and notified. I do that for the reason that the names of those men mentioned cannot be passed upon until I look up the names of those men. When these men come to term we sometimes find several years for which they have not paid. We found two some time ago, I recall Dr. Peter John of Laurinburg, and we would not have gotten them if we had not gone to the books. Where these people have failed a year or two write them a note and ask them for those two or four dollars and ask them to pay up.

Dr. A. J. Crowell: I thought this worked automatically. I thought that was fixed by the By-laws.

Dr. G. T. Sikes, Creedmoor: Might I say one word? The identical motion has been passed four or five years ago, and it is the duty of the Treasurer to do that and the Treasurer and Secretary being combined, it becomes his function to do that.

The President ruled with Dr. Sikes.

Dr. I. W. Faison: From which districts have the councilmen gone?

Dr. K. P. B. Bonner, Morehead City: From the third, Dr. Ernest S. Bulluck, Dr. M. M. Saliba from the fourth, and the sixth district man, Dr. A. C. Campbell of Raleigh. We made a recommendation to the Nominating Committee, a suggestion, upon which they acted, and you will hear that when you hear the report of the Nominating Committee.

Dr. I. W. Faison: Without reflecting on any of the councilmen I wondered whether they had all gone to the war or left home. I have been able to hear from three of them in the last year. That has been my experience with the councilmen during the past year.

REPORT OF COUNCILOR OF SEVENTH DISTRICT

As Councilor of the Seventh District, I have the honor of making the following report:

It gives me great pleasure to say that I am able to report that the State organization work in the counties of my district has improved over that of last year. Taking into account the number of doctors who have been called to the colors on account of the war, the membership is more than last year.

We have one of the best district societies in the State of North Carolina. In most of my counties we have every licensed physician as a member of the society. I have had the pleasure of driving out of Mecklenburg County a crowd of fakers, known as the Associated Radio Medical Doctors. The court found them guilty of practicing medicine without license.

Outside of this particular case I have no knowledge of any other illegal practitioners in the Seventh District.

John E. S. Davidson,
Councilor.

Dr. L. B. McBrayer: I want to offer a suggestion only, I think it will meet with the approval of the members present, and that is this: That most of the 345 men who have joined the colors are the active members of this Society, and the withdrawal of that many active, influential men must of necessity cripple us in many ways; and I want to suggest that each member present here, when he returns home, shall take up with renewed vigor and activity the organization in getting them all in, getting every physician in the county into his medical society and making

a special effort to make the meetings at least sufficiently attractive to bring them out to the sessions. We need organization and compact organization of the medical profession in North Carolina as we have never needed it before, and I hope that the gentlemen will do this.

Dr. I. W. Faison: I want to say in regard to the meeting, you realize the barriers that have been between me and a successful meeting with 345 men gone. It has been work after work, day and night, to consummate the meeting and let it be what it is.

REPORT OF COMMITTEE ON NOMINATIONS

The committee met at 8 p. m. April 17, 1918, at room No. 117 and organized by electing Dr. J. P. Munroe, of the Seventh District, President, and Dr. K. P. B. Bonner of the Second District, Secretary.

It is with a keen sense of pleasure that the following gentlemen, who are recommended to your consideration for election to the various named offices, were, without exception, named by the unanimous vote of the committee. Never has there been a more harmonious meeting of the Nominating Committee of the Medical Society of the State of North Carolina.

We recommend:

President.....Dr. Cyrus Thompson, Jacksonville
First Vice President.....Dr. J. W. Halford, Lillington
Second Vice President.....Dr. T. W. Davis, Winston-Salem
Third Vice President.....Dr. A. McN. Blair, Southern Pines
Secretary-Treasurer.....Dr. Benj. K. Hays, Oxford
Councilor Third District.....Dr. J. W. Tankersley, Wilmington
Councilor Fourth District.....Dr. C. F. Strosnider, Goldsboro
Councilor Sixth District.....Dr. Wm. deB. MacNider, Chapel Hill

Place of meeting: Pinehurst, first, last and all the time.

Committee on Scientific Work—Dr. H. H. Newman, Salisbury; Dr. L. W. Elias, Asheville; Dr. A. S. Root, Raleigh, and the Secretary, ex officio.

Committee on Public Policy and Legislation—Dr. J. M. Parrott, Kinston; Dr. J. M. Templeton, Cary; Dr. L. B. McBrayer, Sanatorium.

Committee on Publication—Dr. Benj. K. Hays, Oxford; Dr. C. S. Mangum, Chapel Hill; Dr. J. P. Monroe, Sanford.

Committee on Obituaries—Dr. H. H. Dodson, Greensboro; Dr. T. C. Johnson, Lumberton; Dr. L. N. Glenn, Gastonia.

Committee on Finance—Dr. E. R. Russell, Asheville; Dr. Z. Fearing, Elizabeth City; Dr. P. R. Hardee, Stem.

Delegates to American Medical Association—Dr. C. P. Ambler, Asheville;

Dr. H. A. Royster, Raleigh. *Alternates*—Dr. A. J. Crowell, Charlotte; Dr. J. T. J. Battle, Greensboro.

Delegates to Virginia Medical Society—Dr. H. D. Walker, Elizabeth City; Dr. W. F. Hargrove, Kinston; Dr. Carroll Wiggins, Winston-Salem.

Delegates to South Carolina Medical Society—Dr. P. P. McCain, Sanatorium; Dr. R. S. Lafferty, Charlotte; Dr. Gilbert McLeod, Carthage.

Chairman of the Committee on Arrangements—The present efficient incumbent, Dr. L. B. McBrayer, Sanatorium.

On motion the report of the nominating committee was unanimously adopted.

No further business appearing, the House of Delegates adjourned.

K. P. B. Bonner,
Secretary.

MISCELLANEOUS MATTERS

Dr. Cyrus Thompson, Jacksonville: I do not like to be conspicuous, unless I were better-looking, still I like to do whatever I am asked to do, if it is a reasonable thing; and I especially like to do what my friend Hays asks me to do, although he has asked me to do the like of this on former occasions.

We have had here at Pinehurst thus far a most enjoyable session. It was said before we came here that the place was substantially inaccessible to the North Carolina practitioner, and that, therefore, we were not likely to have much of a meeting. The attendance has been remarkably good. I have attended session after session with almost no break for a considerable period of years, I do not remember that at any time we have had apparently or actually a more interesting and thorough-going session of this Society than we have had here at Pinehurst. Wherever we have gone we have always been most courteously entertained; nowhere that we have met have we been better or more courteously entertained than here at Pinehurst.

This country is a marvelous country, wonderful in its development and the spirit of its people. It is worth seeing by all North Carolinians. It is a magnificent object lesson. I don't know where we will go next year; I don't care to go to a bad place; I want to go to the best place in North Carolina; and as I feel about it—I don't know where the Committee on Nominations is going to direct us—I feel like this is the best place in North Carolina. If the Moore County people can stand us, that is to say, "one good turn deserves another," it would be pleasant to come back and see them again.

Feeling that way myself and being quite sure that the Society feels in this matter as I do (because you always feel as I do; if I don't feel as

you do, and we agree) I move that the thanks of this Society be extended to Mr. Tufts and to the Moore County Medical Society and to the good people of Pinehurst and all this Sand Hill region for the courteous and hospitable entertainment which they have given us, and to these distinguished visiting friends of ours, who have come here and instructed and delighted us.

Motion unanimously carried.

Dr. J. Allison Hodges, Richmond: Just for a moment, at the request of others, as well as by my own desire, I rise to introduce a resolution, of which I am proud, and which is another evidence of the enormous forward steps that are constantly being taken by this Society. This is in line. When I come here and see the progress and the wonderful development that have been evolved in this part of the country, and when we know that such resolutions as were passed here last night are among the very foremost in the work of evolution and development of the science and progress of medicine that is known by any people, I am sure that we must feel encouraged and that we are willing to do everything to further such initiative actions.

I wish to say that in our State and in the city of Raleigh, at the Central State Hospital, there has been developed recently a clinic which is new in some degree and which has been carried forward in a way that will assure greater things in the protection of the public health and in preventing crime and disease, because it is along a new line that will give the citizens of this State an opportunity, as it were, to "take stock" of the mental health of its people at no cost to them and thus prevent insanity, and, in many instances, tend to make producers out of present consumers. I say it is a great forward movement, and it is believed by others, as well as myself, that it is worthy of regard by this Association, and I have risen, to present this resolution, which must be of great advantage, if the movement be fostered and encouraged by the citizens and the profession, which will, as I said a moment ago, not only prevent disease but prevent crime, and it is a pleasure for me to present this resolution.

Whereas. A nervous and mental clinic has been established at the Central State Hospital.

Resolved. That the North Carolina Medical Society desires herewith to heartily endorse the same, and assure its promoters of its appreciation of this forward step in preventing disease and thus protecting the mental health of our people.

Resolution seconded and adopted.

INTRODUCTION OF OFFICERS

Dr. I. W. Faison: I would introduce to you Dr. Thompson, but I have more sense than to do a thing like that; but, Dr. Thompson, I want to turn over the machinery of this Medical Society to you today. It has been in my hands for a year. I have run up on a good many roots and stumps and been in many holes and valleys. It has been a hard year with me, the result of the year in the last three days speaks for itself. I wish that you will miss a good many of them that I have had to contend with. For instance, I wrote or had written to every member of the ten councilmen in this State; as a living witness today, I can vouch for only four of them. I saw one on the street and talked to him, I got letters from the other three. The other six are, so far as I know, not in existence. I wrote letters to 125 of the medical men of this State to help me out in making this meeting a success; fifty-five out of the 125 answered those letters. The other seventy men, as far as I know, are either gone to the war or dead. That is what I have had to contend with. I have said this so that if any of you here are not dead but living, and my good friend Dr. Thompson, writes to you for information and asks anything of you, in the name of High Heaven sit down and write him a letter. He needs your help. This is a hard job, gentlemen, and it is not a one man's job.

I want to again thank you gentlemen for thus honoring me. I have done my best. I will now turn it over to Dr. Thompson.

Dr. Cyrus Thompson, Jacksonville: Considering the lateness of the hour and the schedule of the trains, I shall not attempt to make anything like a speech. I could not make one under circumstances like these, even if I had abundant time. My embarassment is evident to you.

I want to thank the Society for this very great honor that you have seen fit to do me, in this remarkable manner. I did not expect it. I tell you frankly that I had no very serious ambition for it; and if you had seen fit to confer the honor upon another man I would have been content to live the life of a high private in the rear ranks, living happily among you until my days were ended.

I had my diversion, my friends, as every one of you knows, in politics; but when my term of office expired I laid down all connection with politics except so much as every intelligent citizen ought to hold in hand and exercise, and there was nothing for me to do to keep my mind at ease and active but to return to the work which I began in my early days. I was not too old, in fact, when I went out of office to have taken up the study of law, and I have been told that I could have succeeded in that.

I never had a conscience that inclined me to be a lawyer. I wanted to be a doctor that was helpful to the sick and helpful to the well. I have made it a rule of life for many long years that no day shall pass by wherein I shall not make life go a little bit gladder, time fly a little bit smoother for somebody. I have had exceedingly pleasant association with this Society as a whole and the individual members of it in particular ever since I resumed the practice of medicine and connected myself with the Society. I have always been proud of the fact that I was a physician.

I say I love you, and I have been heretofore impressed with the fact that you love me. You have always been very good to me. Men have come to me and told me how much they would miss me when I am gone, and they have hoped that death would stand off and keep his dark wings from over me for a long time. I knew they said it because they loved me; but really, I did not know you loved me this much; and your unanimity in all this proceeding is wonderfully pleasant to me; I fully appreciate it.

This you may not believe, but I had rather be President of the Medical Society of the State of North Carolina, under these circumstances, than Governor of the State of North Carolina; and I stand here today more humbly proud in accepting this honor at your hands than if I were being inaugurated Governor of the great State of North Carolina.

I am a doctor by instinct notwithstanding my ignorance in many lines, and I crave the companionship of medical men. As my friend, Dr. Faison, the retiring President, said, I shall need your support; I shall expect it; and I know I shall have it. I assume the office with the full appreciation of all the responsibilities of it; and although it is a very dignified position, I serve notice on you now that I do not expect to go among you or sit before you at our next meeting here with "a solemn and gloomy aspect upon my countenance." Your demonstration is so overwhelmingly personal, I need say no more.

CONJOINT SESSION OF THE STATE BOARD OF HEALTH AND THE STATE MEDICAL SOCIETY

The President of the State Board of Health: In accordance with the laws of the State we are now to call to order in annual conjoint session the Medical Society of the State of North Carolina and the State Board of Health.

ANNUAL REPORT OF THE STATE BOARD OF HEALTH

W. S. Rankin, M.D., Secretary

In accordance with law and custom, and in recognition of the legal partnership existing between the State Government and the State Medical Society of North Carolina, I have the honor to submit herewith the following report of the work of the Board during the past year.

The form of the report as submitted on previous occasions, has been considerably changed. Heretofore we have made a detailed statement with reference to the work of each executive division. A detailed report of the work of each of the eight executive divisions of the Board is no longer possible within the limits of the time and sustained interest of this Society; however, a full detailed report is unnecessary, as the Biennial Report to the Governor sets forth every detail of our work. Therefore, in this report we shall make a general statement of the work of each of the executive divisions and, in connection with certain divisions, discuss certain new principles of administration of general interest to the profession.

The executive office has divided its activities about as follows: Three-sixths of its time to general problems of administration not referable to the special bureaus; two-sixths of its time to providing for the development of new bureaus and for assisting in inaugurating and carrying on the work of the more recently established bureaus; and one-sixth of its time to interstate problems, and more especially problems connected with the National Defense.

The State Laboratory of Hygiene, under the more favorable environment of its own buildings and grounds, has continued its vigorous and steady growth. In addition to the sanitary and diagnostic examinations heretofore carried on, the Laboratory is now prepared to distribute diphtheria antitoxin at cost of package. It is tubed in a convenient syringe and costs the consumer twenty-five cents per package whether

the package contains 1,000 or 10,000 units. It is believed that diphtheria antitoxin will now be available to everybody. Normal horse serum is distributed under the same conditions and tetanus antitoxin will soon be ready. The new stables have permitted the change in method of manufacture of smallpox vaccine, the Noguchi method being discontinued and the use of calves substituted, and large quantities of the new and very potent vaccine have been distributed free of charge. The free distribution of typhoid vaccine has been continued and the manufacture and free distribution of paratyphoid vaccine, mixed typhoid and paratyphoid vaccine, and pertussis vaccine were commenced during the year. Arrangements were also completed for making free Wassermann and gonorrheal fixation tests.

The Bureau of Engineering and Education has maintained its excellent and fundamentally important record of past years.

The Bureau of Vital Statistics has placed North Carolina in the registration area for both births and deaths. The admission for deaths dates from January, 1916, and the admission for births from January, 1917 The vital records of the State are now accepted at face value throughout the civilized world.

A wealth of interesting information not only to the health interests, but to the State generally, is being disclosed through the work of this bureau. The character and importance of this information is indicated by such disclosures as the following: The death rate of North Carolina is 13 per thousand as compared with 14 per thousand, which is the rate for the registration area. We have the lowest death rate of any of the original thirteen states, that is, states with an age distribution similar to ours. The death rate of North Carolina is the lowest of any coast line state from Maine to Texas. The birth rate of the State is 31.9 births per thousand. The next highest state birth rate in the United States is the birth rate of Connecticut and Michigan, which is 26.7, or 5.2 births per thousand population less than the birth rate of North Carolina. The white birth rate in this State is 32.2. The white death rate, 11.2. The white gain, therefore, is 21 persons per thousand white population. The colored birth rate is 31.1. The colored death rate, 17. The colored gain, 14.1 per thousand colored population; in other words, every thousand of the colored population adds two to the colored race per year; every thousand of the white popultion adds three to the white race per year. Taking into consideration the larger white population of the State, we find that there is a gain, births over deaths, of 34,511 whites a year and a colored gain of only 10,776; that is to say the whites are gaining on the colored in the ratio of three to one. So much as examples of the general value of vital statistical information. Let me give you a sample

of the public health value of the information furnished by the Bureau of Vital Statistics. In 1914, the first year in which we had vital statistics, there was a total of 839 deaths in the State from typhoid fever; the next year there were 744 deaths; the next, 700; and in 1917, 626 deaths, a decline of 25 per cent. Furthermore, the records show that 28 counties that had vaccination campaigns gave a decline of 32 per cent, and 72 counties without vaccination campaigns gave a decline of 19 per cent.

The State Sanatorium for the Treatment of Tuberculosis is now treating 400 patients a year. The average time of treatment for patients is 120 days, or 4 months.

During the past year, under the State law requiring the reporting of cases of tuberculosis, 5,765 cases were reported. Basing the estimate of the number of cases in the State on the general assumption of authorities on tuberculosis of a minimum of five clinical cases for each death reported, there are 15,725 clinical cases of the disease in the State. It would appear, therefore, that only about 37 per cent of existing cases are reported. Probably many of the 15,725 cases are not under the care of physicians and, therefore, are not within the requirements of the State law for reporting cases of this disease. Doctor McBrayer estimates that from 60 to 70 per cent of the cases under treatment are reported.

The Sanatorium came into direct educational contact during the past year with the homes of the 5,765 reported cases, and also with 3,141 homes in which a death from the disease had occurred recently; that is to say, through the law requiring the reporting of cases and the vital statistics law requiring the reporting of deaths, the Sanatorium was enabled to bring its educational influence to bear on 8,906 homes. In addition to this, the Sanatorium has examined and conferred with 800 persons who have visited the Sanatorium for diagnostic examinations.

One of the important phases of the educational work of the Sanatorium is its work among negroes. The consumptive death rate among negroes in North Carolina is 218 as compared with 101 for whites. The Sanatorium has recently employed Florence Williams, an exceptionally bright colored woman who is experienced as a trained nurse, a teacher, and a county supervisor of schools. The object of her work is to organize negro health leagues in negro communities as a means of interesting colored people in sanitation generally and tuberculosis particularly. These leagues have a constitution and by-laws, an oath of membership, and meet at regular intervals for the consideration of health subjects. These leagues appear to offer an effective agency for educating and organizing the negroes in a way that will sooner or later be evidenced in a declining colored death rate.

The Bureau of Medical Inspection of Schools, made possible through

an Act of the General Assembly of 1917, has to April first secured the preliminary examination by teachers of about 179,000 children, the medical inspection of 29,321 children, and the treatment of 1,502 children. Of the thirty-two counties in which the medical inspection of schools is being carried out this year, excellent work has been done in all the nine "coöperating counties" of Davidson, Forsyth, Lenoir, Nash, Northampton, Pitt, Robeson, Rowan, and Wilson. Of the other twenty-three counties undertaking medical inspection this year, the best work, judging from every standpoint, has been done in Wake and Gaston.

The Bureau of County Health Work was made possible through an Act of the General Assembly of 1917, which conditionally appropriated $15,000 annually for the development of rural sanitation, the condition being that this fund shall be expended only in connection with funds received from other sources in the proportion of $1 to at least $3. The International Health Board made a supplemental appropriation of $15,000 annually, making the total annual appropriation for rural sanitation $30,000. In addition, the International Health Board agreed to supply a State director for the first eighteen months of the coöperative work.

The Bureau of County Health Work was organized July 1, 1917, as the agency through which the State Board of Health would extend its coöperation to the counties in an effort to establish county health departments. Dr. B. E. Washburn, of the International Health Board, was appointed director of the Bureau. The object of the bureau is to demonstrate the best methods of performing county health work. At present it is offering coöperation to ten counties upon a definite plan, which considers in a systematic manner the more important problems of each county. Already coöperative health departments have been organized and are now in full operation in nine counties, to wit: Davidson, Forsyth Lenoir, Nash, Northampton, Pitt, Robeson, Rowan, and Wilson.

The coöperative plan is based upon the division of the county health problem into standard units of work as, for example, the unit of soil pollution, the unit of life extension work, the unit for medical inspection of schools, the unit of quarantine of communicable diseases, and the unit of infant welfare work. In addition, any town or city in one of these counties, which has special health problems, may arrange with the coöperative agencies—the State and county boards of health—to have such special work conducted by the county department.

Each county health department is organized on the three-year plan, and is under the joint control of the State and county boards of health. The State Board of Health assists by giving its experience in suggesting the best methods of conducting county departments, and also financially

participates by providing 50 per cent of the budget for the first year; 40 per cent for second year, and 25 per cent for the third year. The average annual budget for each county department is $6,100.

The machinery for carrying this plan into effect consists of a county health officer, who is appointed by and is an official of the State Board of Health; of a central office, laboratory, a Ford machine, and an adequate corps of assistants to enable the health officer to carry each unit of work to the entire county. The county health officer makes weekly and monthly reports to the State Board of Health, and the results obtained by each director are graded comparatively.

Any bureau of Epidemiology is primarily dependent upon the prompt and complete reporting of communicable diseases. The accuracy of this statement is universally admitted, nowhere contested. The reporting of communicable diseases is everywhere among enlightened people, lay and profession, regarded as a matter of too much importance to be left to the whim and convenience of those concerned with these diseases. Enlightened communities, cities, states, and countries deal with this vital problem by thoroughly considered and fully enforced law. All such laws with which we are familiar rest the responsibility for reporting communicable diseases upon two parties—householders and physicians.

A conservative and minimum estimate of the number of cases of the communicable and reportable diseases occurring in North Carolina is 27,000 cases annually. At the present rate of reporting, only 22,500 cases are being reported. The State is 20 per cent short in its reports of the occurrence of communicable diseases. Somebody is not reporting. Are the householders at fault; are physicians at fault; are both in this matter of reporting communicable diseases failing to perform their duty?

Householders are required to report only cases of measles and whooping-cough when the nature of the disease is known to the householder and when there is no physician in attendance. The principal cause of failure on the part of householders to comply with the law is that they either do not know of the law or, not understanding the nature of contagion, do not appreciate the importance of the law. In short, the principal reason householders do not report is ignorance. It will require several years for householders to be educated to the requirements and to the importance of this law. Several counties, through educational material sent through the schools and newspapers, are rapidly gaining the full coöperation of householders.

Are physicians reporting their communicable diseases? All cases of known diphtheria are attended by physicians. There are 7,000 cases of this disease each year in North Carolina. Only 29 per cent of actual occurrence, that is, about 2,000 cases a year, is being reported. All cases

of known typhoid fever are attended by physicians. There are at least 7,500 cases of typhoid fever in the State each year. Only 36 per cent of actual occurrence, that is, about 2,800 cases, is being reported. The evidence is conclusive. Physicians are not reporting.

Why? We absolved householders from failure to report on grounds of ignorance. The failure of physicians to report cannot be excused on this ground. The medical profession would resent it. There are two reasons why physicians do not report communicable diseases. One reason is carelessness. Carelessness is the reason the high class, law-respecting, ethical physician fails to report his communicable diseases. Some of the finest spirits of the profession fail to report because they are careless in this matter of public duty. Carelessness is such an inherent part of the nature of all of us that we all sympathize with its mistakes; however, we should not be blind to its effects. Carelessness is that which often robs tender infancy of its only support and closes the eyes of the young mother on a new world of bliss. Carelessness is the thing that burned Chicago; that caused the Baltimore conflagration; that burns up millions of dollars worth of property every year. Carelessness causes practically all epidemics. Carelessness in the form of national indifference is the only danger that confronts democracy in this judgment day of governments.

The other reason for the failure of physicians to report communicable diseases which occur in their practices, is a more sinister one. There are a few mercenary physicians who deliberately attempt to capitalize the socially near-sighted and ignorant by not reporting them for quarantine. In this way, the mercenary places the ethical physician at a gross disadvantage, for it is grossly disadvantageous for law-abiding doctors to have their patients placed under quarantine restrictions while the patients of law-evading doctors are permitted their full and accustomed liberties. Under such a lopsided administration of law the near-sighted and the ignorant family leaves the better for the worse class of physicians, and law becomes an impediment to virtue instead of an obstruction to vice.

In conclusion, it may be stated that the rigid enforcement of quarantine laws has two objects in mind: (1) Protection of the people against unnecessary contagion; (2) the protection of ethical, law-abiding physicians against mercenary, law-evading physicians. The first object of quarantine administration is the public health; the second object of quarantine administration is justice within the medical profession.

Dr. A. J. Crowell, Charlotte: I suppose the proper thing for this session to do is to receive this report. I move that the report be received and that the State Board of Health be commended for their vigilance and excellent work as shown by the report.

Dr. P. R. Hardee, Stem: In this joint meeting of the State Medical Society and the Board of Health there is a problem that has been confronting me as a country physician for a number of years, and I judge that problem confronts every doctor in the State who is practicing in the rural districts. If it is not out of order, I would like to lay that before the State Board of Health and perhaps they can advise some answer to this at a coming session of the Society if they cannot right now.

I was present the other evening when Dr. Shore made his report, and in that report was contained an article on drinking water. Now, out in the country we have typhoid fever to treat, and a large per cent of these cases we know they got it from the drinking water. In some sections of North Carolina it is a very easy matter for a farmer to get a new supply, that is, if his well is contaminated today he can take a spade and go in another place and open up another in a few hours. That applies only to eastern North Carolina, but when we come up into the mountain sections the well, the drinking water, the source of water supply, is an expensive proposition, and if that water supply is contaminated, how are you going to get rid of that contamination, so that the family can use it again, because in a large section of our State they cannot afford to fill up the well and make another; it perhaps would take from one to six weeks to get the water supply. The question that I want the Board of Health to solve is to tell us who live in the Piedmont, the mountain sections, what to do? In some sections I am advised the man will build his home near a spring so he will know he can have water. Where I practice a well costs anywhere from $100 to $500, and it takes a good while to get water. He cannot afford to close up that well. What I want is some solution as to how to purify that water so a family can continually use it and not have to abandon it as they can in some sections.

Last summer I treated some half dozen cases of typhoid fever. It all came from drinking water from one well which became contaminated. The proposition is to get rid of that contamination.

Dr. K. P. B. Bonner, Morehead City: I would like to offer a very simple solution to that problem, that is, judging from my standpoint, typhoid fever is absolutely inexcusable in this time when the State Laboratory of Hygiene is sending out thousands of packages of typhoid

vaccine. The disease is preventable, and in this day and time I have no sympathy for any one with typhoid fever. That is the solution.

Dr. P. R. Hardee, Stem: It may be inexcusable, as Dr. Bonner says, but we have it, we have it just the same, brother, and those patients, as I said, get it from that infected water. As soon as I was called to see the first case, I commenced to use the typhoid vaccine, but they had it in their system, and they were people of very ordinary means, and they could not afford to throw away that well and get another in that section. That is the problem. I know it may be inexcusable, Dr. Bonner, but we have it, and we are going to continue to have it for a number of years.

Dr. John A. Ferrell, New York: Though I now reside outside the State, my interest in its welfare, particularly with reference to the work of the State Board of Health and the State Medical Society, is as keen as ever. I sincerely appreciate the courtesy you accord me. I have enjoyed the excellent report of Dr. Rankin immensely.

Since leaving North Carolina in 1913 I have been intimately acquainted with the health activities of 25 per cent of the states, and have had the privilege of coöperating directly with the officers of twelve Southern States. In no other state perhaps am I more familiar with the activities of the individual bureaus than in North Carolina. Constructive developments since 1910 have been truly remarkable. The ideal result of 100 per cent efficiency has probably not been reached. Something no doubt remains to stimulate the interest of the chief executive officer, the bureau chiefs and the subordinate staff members. Already, however, the long arms of the State Board of Health are reaching out to the counties, from the counties to the townships or communities, and thence to the individual homes. In 1910 the State Board of Health had approximately $18,000 and nine full-time employees; today in state appropriation it has $186,000 and seventy-six full-time employees. The activities have been carried on, in the main, through bureaus. These are well organized with a capable director at the head of each. As an example of a bureau we have the Laboratory of Hygiene, which is undoubtedly the best in the South. The Bureau for Tuberculosis is another which has undergone very rapid development. The Bureau for the Medical Inspection of School Children, and the Bureau for County Health Work are pioneers in their field, and are drawing attention from elsewhere to North Carolina. The Bureau of Engineering, Bureau of Education, of Vital Statistics, of Epidemiology and others have been organized, and each is performing its function in a most creditable manner. No state, certainly no state in the South, has more to boast of than you have.

In a comparative study of conditions in a number of states, I am convinced that the people among whom the staff members of your State Board of Health work are among the most responsive to be found in any state. They are ready to coöperate and spend their money for the betterment of conditions. Your State Health Department, with its large personnel, dealing with a responsive population, carries a large responsibility to demonstrate how to obtain the largest and most definite results for each dollar spent. As a pioneer in such studies it should, in solving its own problems, contribute largely to the solution of similar problems in other states.

In investing money in public health work, the best investment can be made in brains. In this particular you have been purchasing very cheaply. The competition among the various public health agencies in obtaining capable health officers is keen. Your compensation basis is below the market. You are in danger of losing some of your staff members unless some adjustment is made which will enable you to pay the market price for capable men to carry on your work.

Dr. A. J. Crowell, Charlotte: When I made my motion I felt just what Dr. Ferrell has said was true, and that this Board should be commended for its excellent work. I feel very proud of the showing made by the Board, more especially after hearing words of commendation from one who is in a position to know what our Board is doing and how its work compares with that of other State Boards. It is a very easy matter to criticize. Any fool can do that. There are so many of us who belong to that class. I dislike to hear criticisms, such as I hear sometimes, of the excellent work done, not only by our State Board of Health, but also the general practitioner, specialist, and especially men who are doing things in life. I think if those of us who are always ready to criticize would do better work ourselves and criticize less, both we and our patients would be better off and all of us happier.

Dr. Albert Anderson, Raleigh: Just a word. I would like to state that the Board of Directors of the State Hospitals (we have only one Board now) met on yesterday, and having heard of the free service given by the State Laboratory of Hygiene, accepted for the State Hospitals this service. This work for the hospitals the Board considers a great favor, as it will save a considerable amount for the individual hospital, and at the same time get efficient and competent service. They also feel that it is an economical step for the State by concentrating all the work at one place, thereby preventing overlapping and spending money that we can save, which is so much needed at present.

Dr. C. A. Shore, Raleigh: When considering the domestic water supply there are two points of importance which I think it is necessary to keep in mind in order to get the proper understanding. The first is, the almost universal pollution of the open well. Such pollution is inevitable. The typical open well permits the inflow of surface water, and even if this is prevented, the bucket and rope must be handled by every one that uses the well. The dirt of the hands is washed off on the wet rope and bucket and carried back into the well, and every person that drinks out of the bucket leaves a contribution from the bacteria of his mouth. The water from such a well may be clear and cool, and yet be filthy.

The simple solution is to install a different type of well. The driven or bored well, if protected from the inflow of surface water around the pipe, will provide a clean supply, because the underground water is practically always free from disease-producing bacteria.

The other point I had in mind is the relationship of drinking water to typhoid fever. In spite of the unclean condition of these open wells, they are responsible for very little of our typhoid fever. The typhoid bacillus does not originate in wells or in any other water. It will remain alive in water for a limited time, but its home is in the intestines. If it gets into water it does so by means of some pollution from a human source. Take the case of the family referred to by Dr. Hardee: It may be that the well finally contained typhoid bacteria, but there are so many other ways in which the different members of the family may have gotten the contagion that they were in all likelihood infected as soon as, or before, the well was. In tracing the history of infection in such a family the only difficulty is in finding out where the infection of the first case came from. After it is once introduced into an insanitary home, the other members of the family cannot escape unless they are already immune. The greatest danger is of course the flies. They may go unrestrained from the patient to the food, or from the patient's excreta—thrown out on the ground—back to the kitchen. So, while it is true that water may carry typhoid bacteria, we must not rest content in guarding our water supplies. To do so, in rural communities particularly, would be to strain at a gnat and swallow a camel—or worse. The excreta of the typhoid patient contains the infective material, and if we could destroy this we could eradicate the disease.

Dr. Joseph Goldberger, Washington: I hardly feel that I can allow this opportunity to pass without saying something. I am not as fully acquainted with the practitioners, but from what I know I feel that Dr. Ferrell has understated the case. I simply want to add my personal congratulations on the excellent work the Board of Health of the State

of North Carolina has done along ordinary lines, which has attracted a great deal of attention of the workers in other states.

Dr. Albert Anderson, Raleigh: As there have been so many complimentary expressions about the work of our State Board of Health, I want to direct your attention to a certain individual connected with the beginning of the work of our Laboratory of Hygiene, so ably conducted now by Dr. Shore, and that is Dr. Kinyoun, who is present. The late lamented Dr. W. T. Pate, of Gibson, and I were pupils of Dr. Kinyoun in the Government Laboratory at Washington, D. C., at the time the State Board was preparing to begin laboratory work through Dr. Pate and myself. I wish to acknowledge our indebtedness and gratitude for the inspirational effort of this great teacher in helping us to start, in a modest way, the laboratory work for the North Carolina State Board of Health.

Maj. J. Howell Way: In introducing Major Kinyoun I want to call your attention as regards communicable disease among soldiers, and particularly in reference to the subject of the carrying of the diseases from the homes of the people to the large camps of the country, and the Federal authorities have especially detailed Major Kinyoun to come to North Carolina and coöperate with the North Carolina State Board of Health in the Department of Epidemiology. I may say in passing that this State is one of two states in the Union to which men have been sent to make an investigation, Kansas and North Carolina, and to North Carolina has been sent one of the most distinguished men in his line of work, and I may add that he is an old son of the State, being a native of Davie County, and one of the most distinguished students of epidemiology the American Nation has produced. You will recall it was Surgeon John J. Kinyoun, of the United States Public Health Service, who by his prompt discovery and bold stand saved this country untold horrors of bubonic plague in San Francisco several years since.

Maj. J. J. Kinyoun, M.D., Military Aide to the Secretary of the State Board of Health, Raleigh: This is the third time that I have had the honor and pleasure of participating in your conjoint session. My first meeting was in Charlotte, many years ago, where I demonstrated to some of you a little outfit for the diagnosis of typhoid fever. I was at that time young and enthusiastic, and I felt that all should know about this valuable discovery.

The second time I met with you was at Greensboro, and there my enthusiasm went in another direction, and when the Society had closed its sessions, I had convinced them of the necessity of turning over the State's only quarantine station to the National Government.

The third time is the present one. I will say that I was never more gratified nor surprised than when the Surgeon General informed me of my assignment to the good old State of North Carolina. Of course I thought when informed that my duties would be in North Carolina that Camp Greene was the only possibility, but I was told that my duties would not be in connection with this camp, but my work would be with the State Board of Health in Raleigh.

My work, therefore, is that of assisting Dr. Rankin in carrying out a plan of ascertaining the prevalence of infectious diseases in the State and in turn keep the several camps to which the North Carolina boys are sent informed of such prevalence, with recommendations as how best to prevent the spread of disease to such camps. On the other hand, to keep the division surgeons apprised of the prevalence of diseases in the State so that they can exercise the necessary precautions in furloughing men to places where they may contract diseases and bring them back to the camps. In other words, it is applying the extra cantonment principle, which is certainly doing splendid work, to the whole State. It is believed that on account of the rapid communication which we now possess, and the shifting of populations, that the principle should be applied not only to the extra cantonment zone, but to the State or groups of states if we should hope to be able to prevent our concentration camps from being infected with contagious diseases. This, of course, from a military standpoint, but any good which may occur to a camp from such a plan also will bear the same good results to the population of the State.

The Surgeon General of the Army has decided to try this out in two states before going further. It, therefore, has selected Kansas and North Carolina as representative states, which have practically the same proportion of rural population.

So far it has been found that men coming from urban populations have not shown the same morbidity incidence to the infectious diseases nor the high mortality following these as in those coming from the rural populations. It is, therefore, highly important to ask and obtain from every physician practicing in the State of North Carolina prompt and fullest coöperation in preventing the spread of these diseases to others. The State law, which went into effect last August, gives a splendid foundation for such work, and if this law is carried out in accordance with its intent and purposes, I am sure that the prevalence of contagious and infectious diseases within this State will be reduced to a minimum.

Maj. J. Howell Way: We appreciate the goodly attendance at the conjoint session. We appreciate the very constructive and very helpful commendations of the work of the Board. We appreciate a justified

criticism that came this morning, and I want to say I wish there were more. We want the Board to be criticized. It is your Board. If its operations in any of its plans of operation do not meet your individual, or your personal, or official commendation in every way, the Board of Health cheerfully invites frank, open criticism, bearing in mind always the criticism should be helpful, if possible. However, if it is necessary to make it destructive, let us have it that way. This is the Board of Health of North Carolina, and not that of the individual members.

We appreciate especially the commendations in reference to the work of the Secretary. I appreciate very much the suggestions of Dr. Ferrell, who, from his viewpoint has a first-hand knowledge of the work of all the State Boards of Health, especially in the South Atlantic and Southern States. He knows the salaries they pay their chief officials. He knows what the State of North Carolina pays the Secretary of its State Board of Health. And without asking Dr. Rankin's consent or advice or permission, I am going to tell you this: Dr. Ferrell knows that possibly no state in the Union gets the service from its secretary that we get. Under the law of North Carolina he is paid a salary of $3,000 per year, which is the limit which the law allows. I want to tell you further when the last Legislature was in session a number of amendments to our laws were prepared touching various phases of work, almost all except two, the one bearing on patent medicine, were initiated into the law of North Carolina, the other was a little bill which Dr. Rankin was personally interested in, but would not prepare, even when I suggested that he do so, removing the restriction of not exceeding $3,000 that the Board might pay its Secretary. I prepared the bill myself and placed it in the hands of Hon. H. A. Page. Mr. Page was very much interested in it, very anxious to put it in, very anxious to see it through, and do you know that Dr. W. S. Rankin himself wrote me and went to Mr. Page and demanded that that bill not be put in because he said, "We are asking for some appropriations along various other lines; we are asking for an extension of this work; we are asking for an elaboration of our facilities, and I don't want anybody to feel that I have any personal interest in this matter save the great and godly interest of service," and reluctantly, with the greatest reluctance, I say, Mr. Page did not introduce the bill, a bill that should have been introduced, a bill that should have been passed, but it was never introduced. I want to call you gentlemen's attention to the fact that Dr. Rankin could tomorrow leave North Carolina—God forbid that he should do it; I should not put into words the possibility that he could be induced to do it—he could leave North Carolina and go to various places from New York to Texas at a salary at the start of from 50 per cent to 100 per cent higher

than he has ever been paid in North Carolina. I want you gentlemen to know that, because you are appreciative gentlemen, and you are in touch with men who legislate matters and fix the laws that govern the salaries paid State officers. I want you gentlemen to know that, for the time is coming when it will be necessary to secure legislation along this line.

Again, gentlemen, I thank you for your presence; I thank you for your commendations, and for your criticisms, and again I want to repeat, if you have any criticism to make of the work of the State Board of Health rest assured it will always be gladly received.

Resolution by Dr. A. J. Crowell seconded; carried.

Dr. Cyrus Thompson, Jacksonville: I hold in my hand a resolution which I think it is right for this Society to adopt at some stage of the session, and perhaps the best body to adopt it is the conjoint session. I will read it in a moment.

I am older than most of you. There was a time when I could not have said that. My friend, Dr. Hall (he is my friend, I think a great deal of him; I love him; and, strange to say, I believe he loves me), said something a while ago about the doctrine of states' rights. There are certain great questions, great facts, that come to various and sundry thinking men the world over. My next-door neighbor, who is chairman of the Democratic County Executive Committee, remarked to me only a few days ago that "You do not hear anything now about the doctrine of states' rights," and I said, "No, you don't, and when we are out of this turmoil and in the providence of God safely at peace again, you never will hear again anything of the doctrine of states' rights." And he said, "Why is it that you don't hear anything about it, and why is it that you are not going to hear anything more of the doctrine of states' rights?" I said, "That raises the question of why we have heard of the doctrine of states' rights."

I was educated five years in the State of Virginia. Before my eighteenth year I went and stayed five or six years. I was brought up a Virginian, a Jeffersonian; I was brought up to have the profoundest reverence for Thomas Jefferson, and almost implacable hatred for Alexander Hamilton. As I began to study afterward and watched this country grow, I began to lean away from the provincialism of Jefferson toward the nationalism of Hamilton unconsciously. I began to say (and knew if I had done this at college I would have been reprimanded for it), "The United States" instead of "These United States," and sometimes wrote, "This Nation."

When we gained our independence we were jealous of one another

everywhere; so the prime political doctrine, the controversy for a long time, was this question of state sovereignty, of states' rights; and one of the most remarkable things is how thirteen states, jealous each of the other, could have made a Union even temporarily, that would permit them to wage war successfully and win the independence of all.

Fifty-three years ago, fifty-seven years ago, this country, the North and the South, were at the throats of each other on the doctrine of states' rights. The Civil War could not occur today, because we have learned and progressed, and, in the necessary evolution of government, we have been molded into a body, and there is not any North, there is not any South; we are just simply Americans; and in the providence of God, whatever gloom overshadows, like Nehemiah, like Ezra, I go with profound faith, and feel that the hand of God is upon me, and the good hand of God will be upon America, and the good hand of God will be upon the allies. If God be God, He will, through our compact nationalism bring out a fuller measure of justice for individuals and a fuller measure of justice for nations; and at last on some morning when you may be gone and I may be gone, the world will see what it never has seen, but has got only a glimpse of by the glory of that flag, not simply a civilized man, but a civilized nation, and may be through America a civilized world.

I said to one of my boys, now in France, some time ago, "We have civilized men, but the world has never seen a civilized nation. It has come nearer seeing it in the United States than anywhere else." On the fourth of July, 1914—no, in 1915 at Siler City—I made a speech along this line a little out of season, wherein I adverted to this sociological problem.

The Frenchmen are our brethren, the English and Italians are our brethren, the Russians we would call brethren, and help if we could; the Belgians are our children whom we weep for and our friends; and this conflict of saving and civilizing the world must be won by America if, in the providence of God, it is to be won. It cannot be won without American ideals, American men, and medical men; it cannot be won without American bread and American meat. It is put upon us to feed the world, to establish righteousness, to perfect and establish Christianity throughout the world. And so the Government of the United States sees it. In the winter-time it takes control of the fuel, winter and summer it takes control of the food; and one patriotic man of Moore County, Henry Page, goes down to Raleigh and undertakes to administer the food situation in North Carolina. I take it Mr. Page would like to have us tell him that we are with him, this Society, this conjoint body.

I want to introduce this resolution and ask its adoption by this conjoint session.

Whereas, The physician in his community should be, and is in fact, a leader in public thinking and a moulder of public sentiment which controls popular action; and,

Whereas, The winning of the war demands for our own army and the armies of our allies the wisest economy of all our material resources and supplies:

Resolved, therefore, That we congratulate Mr. Henry A. Page, Federal Food Administrator, upon his unselfish and zealous patriotism and the great public service he is rendering in North Carolina, and that we pledge to him the hearty support of the profession in the prosecution of the necessary work which he has undertaken.

Motion by Dr. A. J. Crowell that the resolution be adopted.

Maj. J. Howell Way: I am going to waive the parliamentary rule. A proposition like that, the justice, the equity, the extreme necessity of which is so manifest that I ask every man to rise and vote "Aye" in favor of it.

Motion unanimously carried.

MEMORIAL EXERCISES

REPORT OF OBITUARY COMMITTEE

Isaac M. Taylor, M.D., Morganton

To the Medical Society of the State of North Carolina:

Your Committee on Obituaries has been able to collect the names of the following members who have died during the past year:

Dr. Oscar G. B. McMullan, Elizabeth City. A graduate of the University of Virginia, 1880. Entered the Society 1889.

Dr. Silvio H. Von Ruck. Graduate of the Bellevue Medical College, 1899. Joined the Society 1902. Died in New York City April 7, 1918.

Dr. Robert Lee Payne, Norfolk, Va. Graduate of the Jefferson Medical College in 1881. Joined the Society the same year, was a member of the Board of Examiners one term, and President of the Society in 1896.

Dr. Augustus S. Rose, Fayetteville. Graduate of the University College of Medicine, Richmond, Va., in 1901. Joined the Society 1904. Died in Fayetteville February 15, 1918.

Dr. M. E. Robinson, Goldsboro. Graduate of the University of Baltimore, 1870. Joined the Society in 1880. Died in Goldsboro March 24, 1918.

Dr. James E. King, Iredell County. Died January 6, 1918, aged 78 years.

Dr. W. P. Parks, Olin, Iredell County. Died at his home March 14, 1918, aged 76 years.

Dr. John P. Moore, Mayhew, Iredell County. Died March 13, 1918.

Dr. Ben Stroud. Graduate of College of Physicians and Surgeons, Baltimore, 1877. Entered the Society in 1892.

Dr. E. A. Hennessee, Glen Alpine. Graduate of U. S. Grant University, 1900. Joined the Society 1904. Died January 31, 1918.

Dr. J. A. Stevens, Clinton. Graduate of Jefferson Medical College 1883. Joined the Society the same year. Died March 20, 1918.

SAMUEL McKEE CROWELL

John E. S. Davidson, M.D., Charlotte

Dr. Samuel McKee Crowell was born in Union County September 30, 1869, and died in Charlotte May 29, 1917, in the forty-eighth year of his age.

He was the tenth child of Andy S. and Martha Ellen Crowell. He was raised on the farm and spent his childhood and early manhood in Union County, and was prepared for college at Bain Academy. He went to Trinity College in 1887. In the autumn of 1890 he entered the Medical Department of the University of North Carolina, under the late Dr. Richard Henry Whitehead, and there pursued his medical course for two years.

Leaving the State University, he entered the Medical Department of the University of Maryland, where he graduated in 1895. In 1893 at the University of Maryland, in the competitive examination, he was awarded an interneship at the University Hospital and served in this capacity to the date of his graduation. He was licensed by the State Board of Medical Examiners in 1895, just after his graduation, and joined the Society the same year. He practiced at Hickory Grove, in Mecklenburg County, later moving to China Grove, and there remained until 1904, when he located in Charlotte and established what is known as the Crowell Sanatorium for the treatment of nervous diseases and alcoholic and drug addicts, which institution flourished under his management, gaining a statewide reputation. He remained in charge of this institution until the day of his death.

No man was more universally liked in his community, and when the roll of honor of great men who lived and labored in his specialty is made up, the name of Samuel McKee Crowell will be there.

Dr. Crowell was a member of the Tri-State Medical Society, and for many years a member of the Mecklenburg County Medical Society. He was Vice President of the North Carolina State Medical Society in 1914 and 1915. In civil life he was public spirited and progressive, lending a ready and helpful hand to movements for the uplifting and betterment of his community and State. He sympathized with the suffering and helped the poor. He was a leading member of the Masonic Fraternity and an earnest and zealous member of the Presbyterian Church.

The solemn and impressive funeral service of the Presbyterian Church included a very beautiful tribute to him. The great number of floral designs attested to the popularity and esteem in which this pioneer in his specialty was held by the community. In December, 1895, he married Miss Emma Morris, of Mint Hill, who with two children survive him.

Dr. Crowell possessed a personality which was a great asset to him in his chosen profession. Alert, wide-awake and energetic, he was always on the lookout for new things and the latest developments in the great science of medicine. Dr. Crowell was intensely human, and knew both how to sympathize with and how to approach men in a way that revealed the genuineness of the heart of the man and physician. Nothing was so

small and insignificant that he felt it too small to engage his interest or attention but rather was he always on the alert at all times for every opportunity to help, to learn and to minister. Cheerful in disposition, he carried sunshine not only into the home, but into the sick room, and about the bed of suffering. Few men knew how to approach and to interest other men as did this physician and man.

Dr. Crowell lived not within himself, but for others, and especially for those who were sick or in trouble, and for these he was ready to give his best, and all of the knowledge and skill that he commanded, and he used his profession both to alleviate suffering and to help the world, and the world was left better by his having journeyed through it and among men for the two score and eight years that mark the bounds of his earthly career.

> "Faith's journey ends in welcome to the weary,
> And heaven, the heart's true home, will come at last."

ROBERT LEE PAYNE

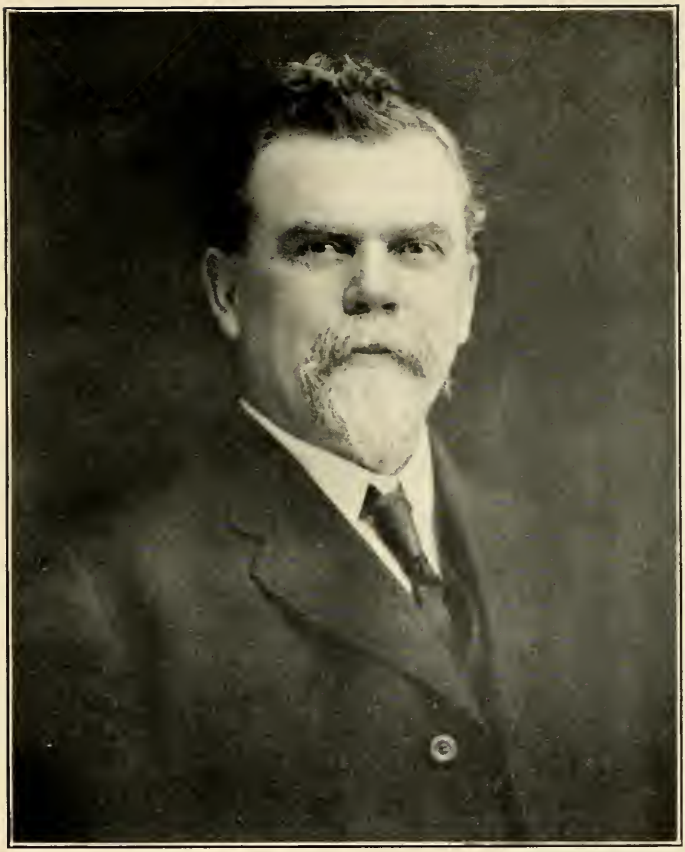
A. W. Knox, M.D., Raleigh

Robert Lee Payne, a son of Dr. Robert Lee Payne, was born at Lexington on March 28, 1857, and dwelt there until 1896.

His preparatory education, in boyhood, was at the Lexington Grammar School and the Finley High School at Lenoir. In the centennial year of 1876 he graduated at the University of North Carolina, where he won the chemistry medal, was Representative of the Di Society and Marshal of the Commencement Exercises.

He received his medical education at the famous Jefferson Medical College in Philadelphia, from which he was graduated with the degree of M. D. in 1881. The same year he was licensed to practice medicine by the North Carolina State Board of Medical Examiners and joined the State Medical Society. Returning to the home of his childhood he practiced his profession there about fifteen years and quickly won the confidence, esteem and affection of the whole community and surrounding country. Later on he achieved a statewide reputation.

Dr. Payne married on February 14, 1882, Miss Mary Emma Hankins, a daughter of Mr. and Mrs. James Hankins, of Danville, Va. In all his future career she was his chief source of inspiration to every high endeavor, in the truest sense a helpmeet always. Five children blessed their union: Robert Lee Payne, Jr., Mary Melissa Payne, John Payne,



Dr. R. L. Payne

Bessie Noble Payne, and Lewis Banks Payne. John Payne died at the age of eighteen months of dysentery. Lewis Banks Payne died in the Jefferson Hospital at Philadelphia May 7, 1917, from pneumonia, just at the same time his degree of M. D. was being conferred on him by the Jefferson Medical College, the alma mater of his father, who had his diploma framed and hung upon his office wall soon afterwards. Robert Lee Payne, the oldest son—himself already an accomplished surgeon—was his father's business partner and his intimate daily companion. He has been recently appointed Chief Surgeon of the Norfolk Southern Railroad, an office vacated by his father's death—worthy successor of worthy sire. The husbands of his two daughters are Dr. M. N. King and Mr. Thomas C. Worth, both now residing in Durham.

There is no question that the death of his son, Lewis Banks Payne, was largely responsible for Dr. Payne's heart condition. He was constantly with him day and night for four weeks, and this heart-rending ordeal nearly killed him. He was never the same man afterwards.

He was a regular attendant at the annual meetings of the North Carolina State Medical Society, and contributed largely to its success and progress, both by his presentation of original papers, and by active participation in its discussions and its councils. Even after he became a citizen of another State, he frequently attended its annual meetings, and in 1905 was elected an honorary member. In 1885 he was elected its Treasurer; its Orator in 1889; Vice President in 1890; member of its State Board of Medical Examiners later on; and its President in 1896. He was also a member of the American Medical Association.

Ambitious by nature, Dr. Payne had an eager and progressive spirit. Desiring a broader field and greater opportunities for his professional activities, he moved, in 1896, to Norfolk, Va., where he rapidly rose to distinction and large success.

Here he became, ere long, a member of the Visiting Staff of the Protestant Hospital and of St. Vincent's Hospital. Although he continued his general practice, he had the surgical instinct in marked degree and became, in later years, a successful and distinguished surgeon, winning an enviable reputation in other states also, to which he was frequently called, both in consultation and to operate.

After taking up his residence in Norfolk, Dr. Payne joined the Virginia State Medical Society, became a member and President of the Norfolk County Medical Society; member and President of the Seaboard Medical Society, and a Fellow of the American College of Surgeons.

In 1908 he was appointed Chief Surgeon of the Norfolk Southern Railroad, and held that responsible and laborious office with distinguished success until his death. Dr. Payne was also Local Surgeon of

the Southern Railway and of the Chesapeake Steamship Company; Chief Surgeon of the John L. Roper Lumber Company; Medical Director of the Jamestown Exposition in 1906-1907; Director of the Norfolk Bank of Savings and Trust; and President of the North Carolina Society of Norfolk.

Dr. Payne was a devoted husband and father, the confidant and chum of all his children. As a friend, he was staunch and true, unselfish to a degree, thoughtfully considerate and kind. As a man, he stood in the front rank of high-class, progressive citizens—*primus inter pares.* Upright and honorable in every relation of life, he commanded the respect and confidence of all who knew him. By nature dignified, he was never austere nor unapproachable. He had a keen sense of humor which often glistened in the merry twinkle of his eye. No man doubted him. All men trusted him implicitly.

"Suffice it that he never brought
His conscience to the public mart;
But lived himself the truth he taught,
White-souled, clean-handed, pure of heart."

"He has done the work of a true man—
Crown him, honor him, love him!"

By nature zealous, industrious and energetic, he was, as a surgeon, both self-reliant and fearless. Bold but not rash, he was ever prompt in action; yet he formed his conclusions and rendered his decisions only after mature deliberation. Though tenacious of his deep convictions, he was open to evidence and argument. He had that fine surgical judgment which warns the true surgeon when *not* to operate quite as unerringly as when to do so—a far more precious accomplishment than mere technical skill without it, and a rarer gift, withal.

While yet a young man a striking incident occurred, illustrating his surgical courage and that superfine quality of moral force in his character which, later on, distinguished him more and more: A man in the country district had received a perforating wound of the abdomen and was in critical condition. Dr. Payne was called in consultation and urged immediate operation. The other consultants opposed it because of unfavorable surroundings and their lack of skill in such work. The man's condition was desperate, and Dr. Payne stressed the high duty of the surgeon to at least make the effort for his rescue, because without it, death was inevitable. The others still demurred, until he declared his willingness to assume the whole responsibility. Under this appeal they did consent, and he operated, finding and closing five intestinal perforations. Although the patient succumbed—chiefly because of delay in

operating and his environment—yet none the less, his conscience was clear, his conviction unshaken that he had done but his simple duty, undeterred by fear, when the odds were all against him. Bear in mind that this was in the early days of intestinal surgery, before the development of its later and brilliantly successful technique. What finer portrayal of high and steadfast moral courage could any man give than this! He wrote me of the incident, asking my frank opinion of his course, because, as he said, the other physicians had censoriously criticised him and attributed the death to his temerity and rashness in doing, as they alleged, a useless and hopeless operation.

The day before his death he was a witness in court at Raleigh, defending a suit against the Norfolk Southern Railway, brought by one of its injured employees. In the afternoon he went to Durham to spend the night at his daughter's home, and I drove him to the train.

While waiting in the station, he had a sudden, but short, attack of angina pectoris; and he told me, when it was over, that he had had about a dozen similar seizures since the death of his son, the year before. Putting his hand upon my shoulder, as we slowly walked to the cars, he said to me, in pathetic undertone: "It will get me, old man, in the end," meaning the heart attack he had just experienced.

About 8 o'clock the next morning, after a comparatively good night, he made ready to return to Raleigh through the country, for the second day in court. While waiting in the Durham hotel for the jitney, due to start in half an hour, he was talking quietly with his son-in-law and his daughter, Mrs. Worth, who was to accompany him to Raleigh, when the end came—swiftly, and apparently without pain.

He died in harness—as I would wish to die—serving his fellow-man. So passed a noble soul!

"Oh, do not mourn for him, he heard his duty's call,
  And answering, gave all he had to give;
Yet though they die, they live:
  Not dead at all—
  Those who obey that call.

"No, no, it is not wasted, all that love and thought,
  It is embodied in all truth and right;
These pass not out tonight,
  Nor turn to naught—
  Labor and Love and Thought."

Dr. A. W. Knox, Raleigh: I move the adoption of the following resolution:

Resolved, That in the opinion of this Society, the life and character of the late Dr. Robert Lee Payne should be commemorated by placing his portrait in the State's Hall of History, and that a committee of two be appointed by the President to bring about that result.

Motion seconded by Dr. Cyrus Thompson; motion carried unanimously.

Dr. A. W. Knox and Dr. H. A. Royster were appointed the committee.

Receipt by the Medical Society of a telegram of greetings from the South Carolina Medical Society, at Aiken, to which the Secretary is instructed to reply at once.

JAMES LLOYD NICHOLSON

Cyrus Thompson, M.D., Jacksonville

Dr. James Lloyd Nicholson was born near Warsaw, Duplin County, May 25, 1852, six months after the death of his father, Rev. James Lloyd Nicholson, a minister of the gospel in the Methodist Episcopal Church, South. His mother was Lucy Jane Pearsall of the same county. She remarried David John Middleton, a most estimable man, who became to Nicholson in every helpful way all that a natural father could have been.

Of serious and pious turn, he connected himself, a mere lad, with the church of his father, and continued to exemplify throughout his life the combined value of good heredity and good rearing.

Dr. Nicholson was married three times. His first wife was Miss Emma Carlton, of Duplin, who died leaving one son; his second wife was Miss Sadie Barry, of Onslow, who died leaving one son; and his last wife was Miss Ida Sandlin, of Onslow, who bore him one daughter and three sons. She and all the children, except one son, survive him.

He graduated in medicine from the University College of Medicine, New York, in 1875, and joined this Society in 1880. He began the practice of medicine at Clinton in 1876, from which place in a little while he came to Richlands to practice in partnership with Dr. C. G. Cox. This partnership proving unsatisfactory, was soon terminated, and he resumed the practice at Clinton. In 1877, Dr. Cox having died and left vacant the large territory supplied for many years by him, Dr. Nicholson returned to Richlands, where he did a remarkable work and

spent in the upbuilding of his adopted home the remainder of his very worthy and useful life.

He was an honorary fellow of this Society. From 1897 to 1905 he was a member of the State Board of Health. From 1908 to 1914, he was a member of the State Board of Medical Examiners. Whatever preferment came to him came in sheer recognition of his personal worth. Of his worth as a member of this Society, I shall leave others to speak, contenting myself to speak briefly of the man as I knew him.

His academic education was limited to the advantages offered by the local common and high schools. Of acquisitive mind, he finely educated himself by subsequent reading. He had the good habit of reading books and discussing them with his friends. He read the periodical and current literature also, and was always well informed as to events and things. Of broad and generous mind, the whole world of things interested him, and in the range of useful information, he was easily the foremost man in his community.

He was a student always. Like "jocund day upon the misty mountain tops," he looked eagerly always for a better light, a deeper knowledge, a fuller power for helpfulness. His mind was never stagnant, but living always. He would not have mentally crystallized in a thousand years. Not infatuated with the new nor wearied with the old, he sought among the old and the new the growing best. Recognizing the limitation of the old and the possibility of the better which the new might contain, his knowledge was ever abreast of the foremost, whether of theory or of practice, which the masters knew or thought they knew. Man of faith, he welcomed the new, looking for revelations; man of works, he expected no revelations but through the assiduous work of thoughtful men.

He was a little older than I am, and began the practice two or three years ahead of me. Our work was always in contiguous territory. We were warm and sincere friends from the beginning, mutually helpful and with never a thought of rivalry. No code of ethics need ever have been written for him; he was right-minded, and needed the curb of no rule or law. He was warm-hearted and sympathetic; companionable but not lighthearted; not austere, but thoughtful. Our temperaments were different; our tastes were much the same. All phases of life we discussed together and agreed in our conclusions. His judgment was remarkably good in whatever field, and I felt fortified if I yielded to it. Much of the pleasure of my living has come from my association with him, and I shall never know the magnitude of my debt for his good influence over me. And I know that I added to the pleasure of his living. Humor has decided and happy therapeutic uses. He was not devoid of the sense of humor, but he lacked the faculty of creating or expressing it. I never

knew him to tell a good story, but he was constantly laughing over the good stories that I told him. With all his unusual mental equipment, he was wonderfully diffident. To attempt to stand in public and speak would simply overwhelm him. But whatever courage was demanded, there was none more fearless than he. If you did a good thing, you wanted him to know it; his approval was joyous and delightful. If you had done a mean thing, he was a man from whom most of all you would have striven to hide it, both for your own sake and for the sorrow your deed would have brought upon a clean soul.

This man was just a country doctor, of course, but even the careless stranger or a child would have felt that he was more and better than the common man. For with all the air of simple modesty that characterized him, the evident clean manliness of him shone through and was unmistakable.

And so, full of capacity and enthusiasm and high purpose, he went in the lead naturally. He found time for every good work; he stimulated scientific agriculture, he built better roads, he built schools and churches, and superintended Sunday Schools. He lived and taught faith and love and reverence; and with no suggestion of arrogance, he walked humbly and unafraid with good men and good women looking up to him through all his years. Coming young into a broad community, which was not rich, but full of possibilities and well-to-do, a land delightsome for location and adaptable fertility, he lived there laboriously the leading spirit for forty years.

He was a strong man, a man of convictions, of purposes that bound him, a man of ideals of a sort which made him an ideal man. If his goal had been the selfish dollar-mark and his heart had been content with the equipment of the quack or the crustacean practitioner of physic from the same field by less industry he could have amassed a very snug and enviable fortune. But he left as the inventoried outcome of all his labor but a very modest estate. Sincerely loyal to the highest purposes, he cared for a dollar only for the good that he could do with it. Every increase of knowledge or betterment of condition delighted and satisfied him.

What reward had he then, for this high-minded life of laborious service? Only this that he lived well and made others live better with him and after him. His reward lay unmolested in the conscious richness of his soul, in the sure knowledge that he was contributing the best part of the best that marked the progressive development of the community in which he lived and in which his neighbors and children were to live after him. He lived a very happy and helpful, and therefore, a very successful life.

After some years of declining health from a pellagra which stealthily manifested only evanescent signs upon his hands now and then, he suffered many months the entailment of a nearly pernicious anemia and a torturing multiple neuritis. On the morning of January 21, 1918, death found him unconscious and gently conveyed him past all his ills.

I grieved as I had seen him gradually going, and could see from time to time that much of him was already gone. But for him, an upright man, there was no moaning at the bar when he put out to sea. My sorrow stupefied by his departure was roused by the jubilance of my joy that God in place of suffering had given his beloved sleep, and that, admirable and lovable, good and great, as my friend unquestionably was, he had been since our early manhood my most intimate associate and had lived and labored among my own people.

Dr. L. B. McBrayer: As an evidence of his ability to draw the younger scientific men to him as comrades and friends, as has been so eloquently depicted by the eloquent speaker who has just closed his remarks, Dr. E. J. Wood will speak upon that side of his life as well as of his influence upon the profession generally in his section of the State.

JAMES L. NICHOLSON

Edward J. Wood, M.D., Wilmington

To be asked to take part in a memorial to Dr. J. L. Nicholson is a high honor, and would be so regarded by any and all of the medical men who lived in his territory and were privileged to know just what manner of man he was. Beloved by all: rich and poor, physician or layman, Christian or infidel, without enemies, without a stain on his blameless life, he left us better for having lived among us, and he left a place with us which will be hard indeed to fill.

I think there was never in North Carolina a character more unique and more unselfish than this man, and that he will be remembered among us as one of the greatest products of our State ranking with the leaders of every period.

Few men in this Society have made as little effort of a self-seeking kind, fewer possessed such a high degree of self-effacement and few have ever been so honored. Honored not so much by office or the usual distinctions, but honored in the hearts of the members who were so fortunate as to have been admitted to his confidences. There were probably few men among us who thought so little of self or so much of the less fortunate.

Gauging his life from the scientific standpoint, he must be measured by an entirely new standard: one made by himself which forever excludes any man from any excuse for doing poor work. He showed that the difficulties that lie in the pathway of the country doctor can be no possible excuse for poor work, for apathy, for professional rusting, or for not offering to their patients the best in the profession.

He was one of the first in North Carolina to see the importance of hookworm disease both from a medical and an economic standpoint. Most of us can recall the beginning of his interest in this subject in 1903, when Dr. Stiles first appeared before this Society. I remember Dr. Nicholson first as he eagerly heard about this "new old" thing which had sapped the life and stunted the growth of his people. What an unfolding it was to him! He saw hundreds of cases and scores of unexplained symptoms—complexes made as clear as the noonday sun. He saw, too, new hope and new life for countless of our most unfortunate class: a class which had degenerated from the best to a station if possible lower than the negro because the negro can better withstand the ravages of such scourges. Probably few of you know how he became the apostle of this new discovery and how he blazed a trail through Onslow and adjacent counties carrying the blessed news and the thymol. From lethargy and retarded development the youth of that section have sprung up into new life and renewed hope. Where there was abject squalor and even degradation, can now be found comfort and prosperity, and if you look closely you will find in the windows of many of those homes the little service flags telling to the world that Dr. Nicholson had applied the touchstone and had brought back to the full joys of citizenship a family far advanced in physical decadence through this insidious evil, and that the young man of the home was able to go forth in the strength of new found manhood and follow the illustrious example of his forefathers who had served so well with Washington and who could survive a winter at Valley Forge.

It is hard to realize the far-reaching importance of his hookworm teaching among the people of Onslow County, but the result will be a lasting memorial to his loyalty, his diligence and his enthusiasm. It will mean the reclamation of a pure strain of Anglo-Saxon far advanced though they were in a degeneracy which owed its origin largely to this soil infecting parasite. The "poôr white" of the South is rapidly disappearing, and soon it will be but a memory making in itself a monument to such pioneers as Dr. Nicholson, who was fashioned after the plan of heroes of old.

The wonderful medical missionary work begun by Dr. Nicholson in his own county did not remain confined to it. About ten years ago in

New Hanover County we woke up to what this backwoodsman was doing and sent for him to come over and help us. He came gladly in spite of his natural dislike for public appearance. It was a red letter day in our county. Men came from all over the eastern part of the State and heard this apostle of hope tell how the clay eaters could be recalled from their long sleep of lethargy and the dwarf made to grow, the old child made to put on man's estate and the barren woman to bring forth fruit. In all of his simplicity, but with wonderful effectiveness we were shown what the hookworm had done for our civilization and the simple means for its eradication. All of us thank God that he lived long enough to see the fruits of his labors.

The impression he made in Wilmington will be lasting. Not only did he teach us many things, but he inspired us to renewed activity. For, behold, he was a man who did not mention the making of money from his professional activities nor did he feel that his isolation or his many duties or his lack of laboratory facilities justified poor work or failure to make an effort along all lines of advance. Like the beloved Trudeau in the lonely Adirondacks, hampered by sickness and every known natural obstacle, it seemed that each difficulty marked another step of advancement.

He put us all to shame and never knew it. He thought he was learning much from us of new laboratory and clinical methods, while all the time he was teaching us the greatest lesson we ever learned. We saw in him at once the proof of that old quotation: "If a man write a better book, preach a better sermon, or make a better mouse-trap than his neighbor, though he build his house in the wilderness, the world will make a beaten path to his door." We think in Wilmington that we have a good medical profession, but we are equally ready to acknowledge our debt to Dr. Nicholson for much of the inspiration. No teacher ever taught his branch better because no teacher ever knew the subject more thoroughly, and no teacher could have been fired with more enthusiasm.

His activities were not confined to hookworm disease, but in every public health advance he was found an early devotee who applied promptly whatever there was of a preventive nature within the grasp of his people. All of us remember his study of myiasis and the unfavorable conditions under which he worked it out: conditions which would have been sufficient to dampen the ardor of any one but Dr. Nicholson. He was a keen observer, and when he lacked hospital facilities or laboratory equipment he made up for it very largely by his painstaking study of his cases, keeping all of his seven senses in his finger tips. His opinion was highly prized by his fellow practitioners far and near, for in addition to his knowledge of medicine he added sound judgment and rare

common sense. His fairness to his associates needs no mention here, for he could not have done otherwise if he would, as all of us who were associated with him in this Society well knew.

The nobility of his character was best demonstrated in his staying at home. He was well versed in his profession—far better than many of our best men in the cities, and he would have succeeded professionally anywhere, but he never seemed to think that he deserved any credit for remaining at his post, though at times there were many discouragements.

A review of his remarkable life calls to mind that character of MacLaren's, *A Doctor of the Old School.* But not even this Dr. MacLure with all of his devotion to his simple flock of Scotch shepherds could excel our Dr. Nicholson. You will recall that at MacLure's funeral it was decided to inscribe on his tombstone: "For greater love hath no man than this that a man lay down his life for his friend." With equal right this may be placed over Dr. Nicholson's resting place, for in the very service he rendered his people he spent himself beyond repair knowing all the while that he could not stand the pressure long. When he came to us for some of that help which he had so lavishly poured out on others we found at once that there was little that we could do, as his color index already indicated a well defined pernicious anemia which added to the other conditions, so faithfully watched by Dr. Thompson, made the outlook anything but encouraging. It will be interesting to you to know that while he was in Johns Hopkins Hospital under the care of Dr. Thayer he received the marks of professional appreciation which his high place with us entitled him to, and I sometimes think that those men were even able to appreciate him and his service better than we could.

The greatest lesson we can learn from his life is that of sacrifice. Long after his skill as a physician is forgotten, his life of unselfish service will be remembered and will make a tradition in his section. Like Trudeau, he included within his duties such spiritual ministrations which made it possible to help his patients die as he also helped them back to life. By his life and example he showed us that ofttimes it is only the physician who can give the dying patient the consolation of the religion of Jesus Christ, the Beloved Physician, who will always be the exemplar of our profession.

Dr. L. B. McBrayer: Perhaps there was no greater period of usefulness in his life than the years 1908-1914. He gave to the Board of Medical Examiners of the State of North Carolina a reputation for scientific examinations that they had never had before, and will probably never have again. Dr. Benjamin K. Hays, his associate at this time, will speak in regard to him.

Dr. Benjamin K. Hays: On the Board of Medical Examiners, of which I happened to be a member for six years, the seven of us came to love each other like brothers. Dr. Nicholson was the senior member and if you would go to any man who served on that Board today and ask him which of the members of that Board he loved most, without hesitation he would say, "Dr. Nicholson," and the other members would not feel jealous. We looked up to him, honored, respected and loved him. We went to him for advice because of his knowledge, because of his reserve judgment, because of his honesty and integrity, and because we would find a sympathetic listener, who always had the time and attention to give to our wants and needs. Perhaps the dominant characteristic of the man was modesty. He might have held the highest office of this Society—I do not remember to have heard him open his lips on the floor of the Medical Society—and yet those of us who knew him best knew he was one of the most loyal members of this body. To me he typified the great reserve force which characterizes the American people.

Well might we say of him, as has been said of another, that he was—

> "One who never turned his back, but marched breast forward,
> Never doubted clouds would break,
> Never dreamed, though right were worsted, wrong would triumph,
> Held we fall to rise, are baffled to fight better,
> Sleep to wake."

Dr. H. H. Dodson, Greensboro: I cannot speak of the passing of Dr. Nicholson without emotion. He was my friend, and the few words I have to say are rather of a personal nature. You have heard from others beautiful and just tributes to his worth, character and attainments. Dr. Nicholson with his great modesty, and his retiring nature, had to be discovered to this Society, and we owe a debt of gratitude to Dr. Richard H. Lewis. It was through Dr. Lewis that he entered into the work of the Board of Health in 1897, and I am sure it took some persuasion, yet from that time on he gave the best that was in him to this Society. I learned to know him well during my association with him on the Board of Health, and on the Board of Medical Examiners for six years I knew him intimately. We always roomed together, we examined our papers together. There was no member more respected or looked up to, both by his associates and the young men who came for examination. Up to a year ago I was closely associated with him, and there are few men in North Carolina who knew him better than I or loved him more. The last time I saw him he was a guest at my house. Dr. Nicholson was a man of wide sympathies, great charity and love for humanity.

This is simply a personal appreciation of the man. He was so lovable,

he was so true, it is good to have known him. He lived and died bearing the "grand old name of Gentleman."

Brief was the twilight, as he passed from light to dark, from dark to light.

AN APOSTROPHE TO DR. J. L. NICHOLSON

L. B. McBrayer, M.D.

Nicholson! Dear Nicholson! A hero, even among the commonplace; beloved by all who knew him—in character, sublime! Grand, though modest; a towering intellect, though feeble in body—a leader among us, though always retiring.

How we love thee; how we miss thee; how we mourn thee, Nicholson, my friend!

The President: I do not feel like letting this occasion go without having a word to say about my friend Nicholson. He and I were born within ten miles of each other. I have known him all my life. In the early part of my professional life we were close friends of this Society. When I came west that friendship did not keep up to the fullest. The last time the Medical Society met in Charlotte I had Nicholson at my house for dinner and while he was there he said, "Faison, you don't have to work hard now like I do." I said, "Nicholson, why don't you go to a city and work less?" He said, "Faison, I would not leave my people for any city on earth." That was Nicholson's idea. When my own boy went before the Board of Medical Examiners I sat down and wrote to Nicholson. I told him my boy would be down there, I asked him to treat him kindly, I knew he would do it, I wanted to just say something. After he had gone home I got a long letter from old Nicholson. He said, "Faison, I am glad you wrote to me but why did you write to me about that boy of yours?" He said, "After I heard of his education and where he came from I was almost too timid to ask him a question." That was another great point of Dr. Nicholson's life. He has gone from us, and it will be a long time before we have a better man in this Society than Nicholson.

OSCAR McMULLAN

THOMAS S. MCMULLAN, CAPT. M. R. C.

"The hills are shadows, and they flow
From form to form, and nothing stands;
They melt like mists, the solid lands,
Like clouds they shape themselves and go."

Thus the man of whom I shall speak in these few lines. Strong in character as is the granite of the everlasting hills; bountiful in charities, rich in the jewels of good deeds, immovable from the path of rectitude, unremitting in toil and unsparing of self, he fell upon the first slope of his journey to the world's good night, and his life dissolved like the early morning's mist, leaving in our cup of sorrow memories as sweet and fragrant as drops of pearly dew. The sketches that have appeared of Dr. Oscar McMullan since his death have told somewhat of his early life, and of his rapid rise to professional and business eminence. It needs no word to tell of his kindnesses, for the hearts of those he served are silent witnesses; it needs no word to tell of his skill, for living monuments are glad to testify; it needs no word to tell of his business sagacity and acumen, for the evidences of it are manifold and apparent; it needs no word to tell of his wonderful influence over, and attachment to himself of the younger generation, for an observer could always find them lingering near, and trusting him to guide their feet aright, who, since that hour he led them through life's great triumphal arch, had been their guide and counselor. No need for me to say these things again; all know them well; all know he lives within the hearts of multitudes whom he served, and all will say with me, will say with loving words and pride; with eyes grown dim and voices broke with sobs—

"So here shall silence guard thy fame,
But somewhere out of human view,
What e'er thy hands are set to do
Is wrought with tumult of acclaim."

What greater splendor can encompass a man's memory than for the world to know—his world, in which he lived and died for duty's sake—that whatsoever in the spirit land his hands were given to do would be well and truly done? Dr. McMullan carved out his own destiny surely, if it be given mortal man to do this thing; truly was he the architect of his own fortune, and the building which he builded was founded upon a rock. The son of a Methodist preacher, stationed at Hertford just at the be-

ginning of the Civil War, a period when the salary of an itinerant was small, his opportunities were limited, but he let not one pass by. Industrious and diligent in all things, zealous always in pursuit of a laudable object or ambition, he set about to acquire an education; frugal and self-denying he accomplished well that purpose, graduating at Trinity College with praise and honor. After teaching school a few years in Hertford, N. C., securing, by his unusual talents and prudent bearing, the reputation of being one of the best educators of his day and generation, he began the study of medicine in the office of his brother, Dr. J. H. McMullan, with whom afterward he was associated in practice before his removal to Elizabeth City. His medical studies were undertaken at the University of Virginia, from which institution he graduated in one year with marked distinction. It was the fortune of this writer to be a student at the same school a few years later, and it is a happy reflection, and one filled with a pardonable pride, that after the lapse of many days, there were told to him by men grown gray in science and in lore the stories of a slender, black haired Carolinian, who came to them untaught of art of medicine, and who by study and by sacrifice left them its master.

Soon after his graduation, and entry into the practice of medicine Dr. McMullan made real the idyl of his youth and early manhood—and to her who yet abides on earth; who mourns him with a simple faith that yet beyond his spirit guardeth well! Throughout this wedded life was a fixity of purpose; was no neglect of opportunity to make a happy home; no shadows that could be banished by the sunshine of a smile; no sorrow that could be subdued by a perfect trust; no burden but what was carried by the stronger hand; no word that could be stayed by gentleness; no gloom that could be lightened by the radiance of a perfect love. I was an inmate of his home during a part of my student days. I write these words because I know, and she who sits in solitude this day will well forgive this entrance into the Holy of her Holies, because she knows that could he speak he'd tell me to write the truth of what I saw and seeing know. He'd bid me paint the glow of happiness in that home with brush deep dipped in rosy meltings of the sunset's evening gleams, and tell how oftentimes at morn and eventide I heard the harp of harmony as sweetly tuned as if its strings were drawn in lingering tones by God's white vested minstrelsy. That harp is silent now! Its chords are numb with grief and pain, but through the running of the years I hear the echoes of its melody, and as through deep and vaulted aisles, I catch the flute-like music of a perfect ecstasy.

This writer's professional contact with "Uncle Oscar" extended over many years. He was his first instructor; his first benefactor; his af-

fectionate kinsman; his steadfast friend; his wise adviser; he knew him in his association with the best physicians of the State; fellowshiped with him as a coworker in the North Carolina Medical Society and has seen him in debate time after time with master minds, watching him with pride as with his great knowledge and analytical mind he pierced the armor of their argument with a point of logic as keen as the scimitar of Saladin. Has seen him at council boards, weighing men and measures in the scales of blind justice; has seen him, where many were fore-gathered for good cheer or to promote a worthy enterprise, delight his hearers with beautiful words, aptly chosen, bearing in them a wealth of human sympathy and a profound knowledge of the wonderful beauties of the world about him; has seen him, Oh, many, many times, as he bended o'er the couch of suffering, touching with gentle hand, comforting with spoken word, banishing fear because there flowed from his own heart a mighty confidence. And yet! Ah! How strange the rulings of fate! He saved others! Himself he could not save! In the midday of his usefulness; though he had served well nigh two generations well! In the meridian of his happiness, for he had gathered together, in the providence of God his dearest treasures! In the zenith of his fame, for his light had burned brighter and brighter until it was a halo of glory about his head, he fell, a sacrifice upon the altar of a loving people's needs; a martyr to the labor that was his very life.

And he would have preferred it that way! How splendid an heritage is it that he has left! Far better than storied urn or animated bust—the memory that his last conscious moments were given to thought, not of himself, but of the many sick ones in his care; that even through his rapidly clouding mind there flittered ever and anon a nebula of that same sweet kindliness that had ever been his part toward those in trouble or distress; a hazy knowledge of his desire and power to help! And then to know! And then to know! That when, as from a misty shore, The Hand outstretched caught him, a smile of triumph came, and lingered long that we might see the seal of high reward the Master set upon his face. Strong and sweet in life; Strong and sweet and victorious in death!

> "A life in civic action warm;
> A soul on highest mission sent:
> A potent voice of Parliament:
> A pillar steadfast in the storm!"

Just one word more. He was my kinsman, and I loved him; but may I not be just, for do I not know how he loved justice? May I not say that his creed—even though he was a member of no church—was held as steadfastly as the Moslem holds his devotism to Allah? And what was

that creed? Many times has he expressed it in words; all his life in acts —A belief in God and love for his fellow-man. Tolerant of all, he lived his life in strict conformity to the two greatest commandments of them all, and because of this his name, like Abou Ben Adhem's, shall be written high upon the Lamb's Book of Life. Chary of words concerning the life to come, firm in his convictions because they were the product of profound and mature thought, satisfied about his future, but deeply concerned that all whom he loved should walk the path of life aright, his life was a daily ministry. Always he welcomed his friends, was sympathetic and helpful were they in trouble and had kind words to say. He was equally at home with the poverty stricken and the patrician, and was loved by both because he lived the doctrine of unselfishness, and radiated friendliness as he breathed. His influence was subtle, though insistent; the quality of a man who would offer strength to help weakness, gladness to bless happiness, intuitive sympathy as heartsease. His was a simple life. Offered many positions of professional trust and honor he declined them all, holding that the highest trust that could be given was his investiture with the confidence of those he served, and the greatest honor their words of gratitude and a name for human kindness. Success came his way because he won it to himself; he admired and practiced benevolence, unsought and unparaded; he took pride in business acumen, but loathed dishonesty and despised thriftlessness. He loved his home, and State, and country, and his last great regret was that he was not allowed by limitation of law to actively enter the service of the nation in war. But he asked to go, and when denied, because of age, no vain regrets bedimmed his clearer view, but standing steadfast in defense, confident of his country 's might, ready at all times to do his "bit," encouraging those who could enlist because of fewer years, standing ready with spear uplifted for the fall, with courage that did not flinch, and purpose that did not fail, he took upon himself a far, far greater burden of the sorrows of the world, and found his comfort in the words—

"He also serves, who only stands and waits."

Ready to fight the battles of his land, so he was ready when the final summons came, and went to meet his God unshaken and unafraid.

And now, old friend, and kinsman doubly dear, good night! To write these words of you has been a dear, sweet task, and were you here on earth I'd love to tell you how I think them true, as many, many times, thank God! I've uttered them in my heart. You rest at last! A well deserved rest! Your pulses beat no more, but you left your life behind to guard and point the way! I know you were tired, Oh, so tired, though

your step faltered not and your eye was yet undimmed; Ah, though I miss you so,

"I wage not any feud with Death,
For changes wrought on form and face;
No lower life that earth's embrace
May breed with him, can fright my faith.

"Eternal process moving on,
From state to state the spirit walks;
And these are but the shatter'd stalks,
Or ruin'd chrysalis of one.

"Nor blame I Death because he bare,
The use of virtue out of earth;
I know transplanted human worth
Will bloom to profit, otherwhere.

"For this alone on Death I wreak,
The wrath that garners in my heart;
He put our lives so far apart,
We cannot hear each other speak."

Never mind, old friend and kinsman. There will be a time when we can talk it o'er! When together we can know the mystery of another world! When we can see better—when seemingly dark and blank areas over our head will bud with tender stars. Till then—Good night!

AUGUSTUS S. ROSE

J. F. Highsmith, M.D., Fayetteville

Those who knew him best can best realize how feeble are mere words when one tries to write of the life and character of Dr. Augustus Steel Rose. As inanimate bronze and cold stone can only show forth the outward form and features of the living, breathing man the sculptor would portray—so also is the pen barren in its efforts to truly represent the real man and true friend we have known and loved. Were we able to gather up all the fond words his loving friends have spoken of him; were we able to reproduce here the many kind thoughts of him that have coursed through the sorrowed minds of his devoted patients; the result would still lack the vital, throbbing spirit of the living man, who once moved among us, and fought with us the many battles against suffering, disease and death. Like all true physicians, his life was the life of service to his fellow man, and service cannot be represented in cold words and prosaic type. It is of finer stuff that lives on and on, till time is no more—

"Till the sun grows cold and the stars are old,
And the leaves of the judgment book unfold."

It is with these thoughts uppermost in our mind that we attempt to render a proper memorial to our former friend and companion.

Dr. Rose was the oldest son of Hon. George McNeill Rose and his wife, Augusta Steel Rose. Born on January 27, 1873, he had just completed his forty-fifth birthday, when he died on Friday, February 15th, 1918. His whole life was spent in the city of Fayetteville. At an early age he started on his professional career as a clerk in the drug store of Mr. H. R. Horne, and, after several years of training there, he obtained his license as a registered pharmacist; which training, and his years of experience as a druggist, served him well as a practicing physician. Leaving the drug store, he entered the University College of Medicine, in Richmond, Va., from which institution he was graduated in 1901, and was the same year licensed by the North Carolina State Board to practice medicine. He immediately opened his office in his native city, and, with the exception of the regular visits away from the city to take post-graduate work and study, he was actively engaged in the practice of his profession continuously until he was stricken with his last sickness, just two days before his death.

For several terms he served as coroner and health officer of Cumberland County, and, while holding this position, upon the death of Sheriff Geo. A. Burns, he was ex-officio sheriff of the county until a successor to Sheriff Burns was elected.

He married Miss Jean Evans, a daughter of the late Erasmus Evans, of this county, who, with three children—Susan Murphy, Augustus Steel, Jr., and Jean Evans—survive him. In early boyhood he joined the First Presbyterian Church of his native city, and was successively a deacon, treasurer and, at the time of his death, a ruling elder in the church he loved so well.

Dr. Rose was in deed and in truth a "family physician." Because of his kindly and friendly disposition, as well as his marked ability as a physician, he was loved and honored by all—and this was especially true of the children of the family in which he practiced. For him the child had no dread, as being the cold, hard, unfeeling doctor—he was their friend and companion in the sick room, in the home and on the street. Many an infant eye was full to overflowing and many a child's pillow was wet with tears of real sorrow, when it became known that their beloved "Doctor Rose" was no more.

His was a life that any man might justly strive to emulate—a physician, skilled in his profession—a citizen, honored and respected—a true friend—in short, an honorable, Christian gentleman. Would that every

member of our noble profession could as justly merit that tribute we rightly pay to his memory.

Strong of body and of virile mind, he at once gave and gained in the minds of those with whom he came in contact the idea of strength—a person who could be leaned upon for help and assistance; and it was this manly strength and dependability that was one of his strongest characteristics. Possessed of a strong mind, he always formed his opinion quickly and well, not only on professional matters but in matters affecting public good and public morality, and he could always be found on the side of right when the test came. He dared at all times to express his convictions on moral issues—but though firm and positive in his convictions, he was not bigoted or unduly self-opinionated.

Dr. E. J. Wood, Wilmington: I have an announcement to make. I would be disposed to do as Dr. Hays has suggested and let it go over for next year, but for the fact that this seems to be the first toll that the war has taken of our men.

Dr. Hugh Tate Moore, of Wilmington, died at Camp Kearney, Cal., April 8th, and was buried in his home town Monday of this week. Dr. Moore came to us from New Orleans, had been with us for five years, was a member of the Society, and had attended two or three meetings. I believe without exaggeration he was one of the most valuable members of the medical profession in Wilmington. He was a man about whom you have heard very little but a man held in peculiar esteem by all of us, so much so that at his death the New Hanover Medical Society established a bronze tablet in the James Walker Memorial Hospital to his memory. In addition to that they are raising funds for a very elaborate operating room known as the Hugh Tate Moore operating room for the diseases of the eye, ear, nose and throat.

He went into the army with as great sacrifice as any man could, he went gladly and set us all an example and I could not let an opportunity go by without mentioning the high place he held among us. It is requested that the North Carolina Medical Society allow the resolution adopted by his County Society to be incorporated in the transactions as his memorial.

[Resolution not furnished for publication.]

PORTRAIT OF DR. HENRY T. BAHNSON

George G. Thomas, M.D., Wilmington

Address of Presentation to the Hall of History, Raleigh

Since the long ago, that is, May, 1872, when I first met my valued friend, Doctor Bahnson, he has been to me a perpetual and careful study. His history, so well outlined by Doctor Lewis in his memorial read at the last session of the North Carolina Medical Society, is yet fresh in your minds.

It appears he was a lad only, just from college, full of the joy that a boy has as he greets his approach to his career in life, and while he pondered over his future a new duty called him, and his answer was prompt and lasting. He volunteered to fight for his State, and along in the dreary march, in the din of battle and the lonely terrors of prison he dropped his youth; and lo! there appeared at his homecoming a man full in stature and in the fear and admonition of his Lord, impressed with a determination to make his future as useful and constructive to his people as his manly courage and brave endurance had been noteworthy to his commanding officer in the very forefront of the fighting lines. And he lived up to his high ideals, born and matured by the great struggle in which he took so active a part.

His life was henceforth given in his own strong way to the betterment of those with whom he came in contact as a physician and surgeon to the sick and suffering, and to his fellow citizens at large to whom his useful life and wisdom appealed as a refuge and strong tower. Since those days of my first acquaintance with him whose manly face is before you portrayed by the artist's hand, I have grown in confidence in his mentality, in his persistent endeavor to uphold the right and crush the wrong, and watched with increasing and happy satisfaction his amazing grasp upon the confidence of his people and those who really knew him.

To prepare himself for the continued endeavor for the general good, he was a careful student of such literature as appealed to his discriminating mind. He was likewise a close student of the history of his State and this knowledge likewise he carefully digested, and it served him in his opinions as to the advancement of all that the authorities could do to raise the standard of education in every department where its value could reach. The star in his crown is the fact that in the presence of this continuing study of economics, as well as the history of North Carolina, he never sought or accepted, or, as far as I know, or believe, considered any political preferment. His work was gratuitous and for him be it said, that if it was of the value, which I am convinced

it was, he was satisfied with the fruitful endeavor which only to an active and educated mind could be so productive of good. In his own quiet way he was a counselor of great worth whose only desire in the shape of reward was the product of his labor without any personal desire for publicity.

It is my pride to say he was my friend, and I was included among his intimates, and it is a comfort and incentive to higher things that he felt I was worthy of his confidence and loyal friendship. As I speak, this hand, growing cold with increasing years, is warmed by the recollection of his hearty handshake and my memory of the past is sweetened by his genial smile of greeting. All of you have learned the deep meaning of the slogan of the English people—Carry on. It has gone from their homes to the men in the trenches and back to the homes from these heroes, to the fireside they have gone out to protect, and its meaning is simply—Carry on in the sphere of activity of the soldier and home folks, to the full ability of each one of these brave people, the work that is before them in the great war and to make it the better expression of their loyalty. It is so simple that all of them can understand that their duties are to carry on their work with an earnest endeavor calling forth the best efforts, and may I not then quote you a few lines of Robert Service with which you are familiar of the fuller meaning of the cry going back and forth there, and if we read it carefully it portrays in its meaning the character of Doctor Bahnson:

CARRY ON! CARRY ON!

"But to labor with zest and to give of your best,
For the sweetness and joy of the giving,
To help folks along with a hand and a song:
Why, there's the real sunshine of living.

"Carry on! Carry on!
Fight the good fight and true.
Believe in your mission, greet life with a cheer;
There's big work to do, and that's why you are here.

"Carry on! Carry on!
Let the world be the better for you:
And at last when you die, let this be your cry:
Carry on, my soul! Carry on."

His soul has passed into the realms of the Great Adventure, and to my mind and soul there is a belief he is in full view of the high hills of Heaven and seeing the final solution of the problems of life which had called forth his best efforts to solve and often disappointed or vexed

him. His soul, including his mind, is still following the cry "Carry on," and in God's tender care we may follow him.

It is meet therefore, that his companions and fellow workers in the Medical Society of the State of North Carolina should desire and so provide that his face should look down from the canvas upon those who follow after him as well as the members who knew and loved him, that they may see written on that face fixedness of purpose and the contented look that bespeak his happiness in that his life was an earnest endeavor to reconstruct that which needed repair, and construct that which was to lend itself to the betterment of mankind, at large, both body and soul.

Into the hands of the State, to be hereafter in the hall of history, I, for others and myself, am presenting this portrait of Doctor Bahnson with a certain faith that it will be an incentive to good always, as well as recall a loving recollection of his useful life.

ACCEPTANCE BY J. BRYAN GRIMES, SECRETARY OF STATE

Representing the North Carolina Historical Commission and the State of North Carolina, I esteem it an honor and a privilege to accept this portrait of Dr. H. T. Bahnson.

I have known of Dr. Bahnson all my life. In my early boyhood days it was my good fortune to spend a summer in Salem, and I remember well the love and veneration in which Dr. Bahnson was held by the people of that old town and community.

It was always a pleasure to meet Dr. Bahnson and when he visited Raleigh occasionally I felt gratified and honored when he called at my office.

The people of the State recognized Dr. Bahnson as a great physician, and at the same time he was equally well known as one of the kindliest, gentlest and knightliest of men.

Dr. Bahnson's distinguished appearance marked him in every assembly, and his winsome manners, splendid abilities and honest convictions made him a leader whom every one loved and trusted.

He served his state in war and in peace with courage and fidelity.

As a boy soldier under the Stars and Bars, he was among the bravest of the brave.

Some years ago Dr. Bahnson wrote *The Last Days of the War as Seen by a Confederate Private*, which was a distinct contribution to Confederate literature, and the most vivid description of individual battle experience that I have read. His narrative begins with the breaking of the Confederate lines in front of Petersburg, today (April 2), fifty-three years ago.

In simple, unvarnished language he relates a tale of privation, suffering, daring and unsurpassed heroism in the last desperate days of the war that made the Confederate private ever immortal.

After the war in a long life of peace and eminent service Dr. Bahnson added laurels to his profession and reflected honor upon himself and his State.

The Historical Commission heartily thanks the North Carolina Medical Society and the family of Dr. Bahnson for this handsome portrait of one of North Carolina's greatest doctors and best loved men. We are proud to be able to preserve his features on these walls among so many of his old friends and peers in this hall of history.

REPORT

OF THE

BOARD OF MEDICAL EXAMINERS

OF THE

STATE OF NORTH CAROLINA

ANNUAL SESSION, RALEIGH, N. C., JUNE 24-28, 1918

There were—

52 registered for examinations.

3 failed to pass examinations.

18 obtained license by reciprocity.

Highest average was made by Albert W. James, 94.77.

The next highest was made by Denis R. Wolff, 93.61.

H. A. Royster,

Raleigh, N. C. *Secretary.*

REQUIREMENTS FOR ADMISSION TO EXAMINATION FOR MEDICAL LICENSE

An applicant for license to practice medicine in North Carolina must appear before the Board of Medical Examiners in regular session and present a certificate of good moral character, attested by two persons known to the Board, a diploma from a medical college in good standing, or a license from some other State, and must deposit fifteen dollars with the Secretary of the Board. He will then be examined upon the following branches of medicine: Anatomy, Physiology, Surgery, Pathology, Hygiene, Chemistry, Pharmacology, Gynecology, Materia Medica, Therapeutics, Obstetrics, Diseases of Children, and the Practice of Medicine. The examinations are written, oral, and practical, combined.

He must make an average of 80 per cent upon all the branches, and he must not fall below 35 per cent upon any one branch.

Applicants must satisfy the Board that they have an academic education equal to the entrance requirements of the University of North Carolina. Only graduates of Class A medical schools (rating of Council on Medical Education of the American Medical Association) are acceptable to this Board.

Applicants who have finished a two-year course, without conditions, in accredited medical schools, may come up for examination on Anatomy (including Histology and Embryology), Physiology (with Pathology and Bacteriology), and Chemistry and Hygiene.

TEMPORARY LICENSE

An applicant for temporary license must appear before two members of the Board of Medical Examiners and present a certificate of good moral character, a diploma from a medical college in good standing, and must pay a fee of five dollars. He must then stand a satisfactory examination.

A temporary license continues in force only until the next regular meeting of the Board, and is granted but once to the same applicant.

Applicants for temporary license may call upon any two members of the Board at their homes at any time in the year, selecting the two most accessible.

REQUIREMENTS FOR RECIPROCITY

1. Reciprocity is granted only to men of known reputation and ability. Unless the applicant has had five years experience in successful practice in the State in which he then resides, or two years of successful hospital experience, or has filled positions of medical trust accounted by the Board as the equal of these, and unless he is a graduate of a high-class medical college and possesses a good preliminary education, his application will not be considered. The burden of proof is upon the applicant to show what his attainments are.

2. He must not have failed before the North Carolina Board.

3. He must present himself in person before the North Carolina Board at its regular session. To this rule no exception is ever made. He must then pay a fee of fifty dollars.

4. He must fill out a blank application in regard to his moral character, educational attainments, identity, etc., and file the same with the Secretary at least thirty days before the meeting of the Board. (Blank applications may be obtained from the Secretary upon request.)

5. Reciprocity will be granted to physicians who have been admitted by examination to the United States Public Health Service, the United States Navy or Army, and who have been continuously in service or have received honorable discharge, and have been in continuous successful practice to the date of application.

In regard to the matter of reciprocity, the State of North Carolina regards the qualifications of the applicant rather than the State from which he comes. In every case it is necessary that the applicant appear in person before the Board of Medical Examiners in regular session, and by this personal interview convince the members of the Board that he is a man of intelligence, sobriety, and high personal character. For this reason, it is impossible to make a definite promise of reciprocity to any man until he has appeared before the Board.

The applicant must also produce papers showing that he has a good preliminary education, is a graduate of a high-grade medical college, and that he has been successful in his medical undertakings since graduation. In addition to the application blank, the applicant must furnish abundant evidence that every statement contained thereon is true; that is, when hospital experience is claimed, it must be accompanied by letters from the proper authorities, showing the time of such service, and certifying that this service was satisfactory. The same requirements are made in regard to other positions of medical trust.

The North Carolina Board reserves the privilege of rejecting any applicant for reciprocity without question or comment on the part of the applicant.

EXAMINATION QUESTIONS 1918

PHARMACOLOGY, MATERIA MEDICA, AND THERAPEUTICS

DR. JOHN Q. MYERS

1. How is opium obtained?
   (a) Name two alkaloids of opium and give dose of each.
   (b) Give physiological action of opium on the nervous system.
2. What are the medicinal uses of
   (a) Ipecac.
   (b) Emetine.
   (c) Strychnine.
3. What are the physiological effects of nux vomica on the nerves and circulatory system?
4. Define and give example of each of the following:
   (a) Narcotics.
   (b) Anesthetics.
   (c) Sedatives.
   (d) Antiseptics.
5. Name ten drugs most frequently employed and give the dose of each.
6. Name five diseases in which you would prescribe arsenic.
7. Define:
   (a) Immunity.
   (b) Infection.
   (c) Amboceptors.
   (d) Phagocytosity.
8. Describe the treatment for broncho-pneumonia.
9. Describe the treatment for cerebrospinal meningitis.
10. Outline treatment for uremia.

PRACTICE OF MEDICINE

DR. JOHN G. BLOUNT

1. Define leucocytosis: What is its diagnostic significance?
2. Describe acidosis in diabetes mellitus Upon what test would you rely for the detection of diacetic acid in the urine?
3. What are focal infections? Illustrate.
4. Give the clinical symptoms and microscopical findings in pyelo-nephritis caused by bacterium coli commune. Treatment.
5. Describe acute infectious cholecystitis; etiology: symptomatology and treatment.
6. What are the symptoms of lead poisoning? Treatment.
7. Define traumatic neuroses or Erichsen's disease; describe a few of the symptoms.
8. What lesions involve the nucleus of the pneumogastric nerve? What lesions its trunk? Describe some of the symptoms of these lesions.
9. Differentiate between spasmodic and membranous croup. Treatment for each.

10. What are the essential differences between pellagra and sprue? Dietetic treatment of each.
11. What are the essential elements in the production of paresis?
12. What is acne?

CHEMISTRY AND HYGIENE

DR. ISAAC M. TAYLOR

1. What are the alkali metals? The general characteristics and valences?
2. What is water of crystallization? Distinguish between deliquesence and efflorescence.
3. Distinguish between alloy and amalgam.
4. What is iodine? How is it obtained? Its properties and its therapeutic uses?
5. Give formula for Glauber's salts; Epsom salts; blue vitriol; copperas.
6. What are proteins? Where in the body are proteins found? Name the chief proteins.
7. What is wood alcohol? Give formula and properties.
8. Give test for glucose in urine; uric acid in urine; lactic acid in stomach contents.
9. What food elements are essential in a dietary for the prevention of pellagra; for the prevention of scurvy?
10. What conditions would guide you in raising quarantine from smallpox, scarlet fever, and diphtheria?
11. What is the purpose of the Binet-Simon test?
12. What would guide you in the acceptance of cow's milk as fit for food?

OBSTETRICS, GYNECOLOGY, AND PEDIATRICS

DR. E. G. MOORE

1. What is hyperemesis gravidarum? Mention its causes and outline its treatment.
2. Tell how you would recognize a postocciput presentation and state why it is difficult of delivery.
3. Describe the mechanism of a frank breech presentation? Wherein lies its danger?
4. Give the clinical history, diagnosis and treatment of puerperal infection.
5. What source of nourishment has the fetus in utero? Describe the method of its nutriment.
6. Define endometritis; state its causes, symptoms, and treatment.
7. What is hysterorrhaphy? What are its indications?
8. Give the indications for and describe the technique of curettage.
9. Define acute poliomyelitis; give its causes, symptoms, and treatment.
10. Give the clinical history of pertussis and outline its treatment.

PHYSIOLOGY, PATHOLOGY, AND BACTERIOLOGY

DR. M. L. STEVENS

1. Enumerate the mental activities of the brain and define one of them.
2. Describe briefly the physiology of the heart muscles, and in connection therewith the conditions called heart block and fibrillation.

3. Why use physiologic salt solution (normal salt solution) for intravenous injection or for hypodermoclysis? What would be the effect of a stronger solution used in the same way? Of distilled water?
4. Define necrosis. Enumerate its various causes. Name the different kinds of necrosis.
5. Give the pathology of cerebrospinal meningitis.
6. Give the pathology of a syphilitic gumma. Name its cause and indicate the class of micro-organisms to which it belongs.
7. Name the acid-fast bacilli and state which are pathogenic and which are nonpathogenic.
8. Name all of the purposes for which you would use each of the following laboratory stains: Wright's Stain; Neisser's Stain; Loeffler's Alkaline Methylene Blue; Carbol Fuchsin; Bismarck Brown.

NOTE.—The written examination will be supplemented by a practical examination in Clinical Microscopy.

ANATOMY

DR. J. F. HIGHSMITH

1. Describe the under surface of the clavicle.
2. Name the branches of the abdominal aorta.
3. Give the relation of the ureter, renal vein, and artery, as they enter the pelvis of the kidney and describe the ureter.
4. Name and locate the accessory sinuses of the face.
5. State the origin of the sensory division of the fifth pair of cranial nerves.
6. Describe in language or by drawing a cross-section of the spinal cord at the first dorsal vertebra.
7. Name the bones for the ankle joint and give their relations.
8. Give the origin, insertion, action, blood, and nerve supply of the latissimus dorsi muscle.
9. Locate and briefly describe the broad ligament.
10. Give the gross structure of the stomach with blood supply.

SURGERY

DR. H. A. ROYSTER

1. Discuss surgical shock: its causes, signs, and management.
2. Describe modern methods for the treatment of burns.
3. Outline the management of a compound fracture of the shaft of the femur.
4. Give the pathology, diagnosis, and treatment of tuberculous peritonitis.
5. Mention the signs of cerebral compression and the indications for operation.
6. Give the pathology, diagnosis, and treatment of hydrocele of the tunica vaginalis testis.
7. (a) What is a nævus, and what methods may be emjloyed for its removal?
   (b) Describe the formation of an abcess.
8. Give the causes and treatment of rupture of the male urethra.
9. Describe:
   (a) The etiology and treatment of iritis.
   (b) The causes, symptoms, and complications of acute otitis media.
10. Define: Cholangitis; splenomegaly; proctitis; visceroptosis; mastitis; hydrocephalus; arthrodesis; pyothorax; rabies; coxa vara.

LICENSE GRANTED

Raleigh, June 24-28, 1918

BY EXAMINATION

The following applicants passed examination successfully and were granted license:

Hugh M. Beam_____Woodsdale
Samuel McD. Beckford_____Raleigh
Mallory V. Burrus_____Rockford
Edson E. Blackman_____Raleigh
John B. Bonner_____Bonnerton
Howard J. Combs_____Columbia
Henry L. Cook, Jr._____Fayetteville
Cora Z. Corpening_____Mars Hill
James G. Dickson_____Raeford
Clinton S. Dietz_____Lumberton
Carl E. Ervin_____Troutmans
Alfred L. Gaither_____Statesville
William H. Harrell_____Williamston
Joseph P. Harrison_____Whitakers
James Hawfield_____Matthews
Roy W. Hayworth_____Asheboro
Vonnie M. Hicks_____Greensboro
Jas. DaCosta Highsmith, Fayetteville
Duncan W. Holt_____McLeansville
Albert W. James_____Laurinburg
Daniel L. Knowles_____Mount Olive
Henry G. Lassiter_____Weldon
Benjamin J. Lawrence_____Raleigh
Charles P. Mangum_____Kinston
Vann M. Matthews_____Matthews
Lee O. Miller_____Asheville
Robert C. Miller_____Hays
Julian A. Moore_____Wilmington
James P. McCain_____Southern Pines
Brodie B. McDade_____Hillsboro
Oscar L. Parker_____Clinton
Samuel F. Parker_____Mount Olive
Golan S. Perry_____Raleigh
James M. Peterson_____Spruce Pine
John D. Quick_____Rockingham
Daniel C. Reyner___Philadelphia, Pa.
Joseph H. Robinson__West Point, Ga.
Annie V. Scott_____Greensboro, R. 6
Samuel F. Scott_____Mebane
Claiborne T. Smith____Scotland Neck
Hugh P. Smith___Timmonsville, S. C.
Samuel C. Spoon, Jr._____Haw River
William H. Sprunt, Jr.___Wilmington
Claudius A. Street_____Linville Falls
Leslie O. Stone_____Kittrell
Henry B. Wadsworth_____Cove City
James H. Wheeler_____Camden, N. J.
Denis R. Wolff_____Rural Hall
Fred G. Woodruff_____High Point

BY RECIPROCITY

The following were granted license by reciprocity:

Charles Beers (Ohio)_____Asheville
George W. Belk (S. C.)___Laurinburg
A. P. Bohannon (Va.)__Virgilina, Va.
A. T. Browne (N. Y.)_Winston-Salem
J. H. Carnelley (Mich.)____Charlotte
Marcus L. Dillon (W. Va.)__Asheville
Mary V. Glenton (Indiana)__Raleigh
W. C. Herring (N. Y.)_____Charlotte
C. C. Hudson (Va.)_____Charlotte
S. R. Jordan (Va.)_____Virgilina
H. Lee Large (Va.)____Rocky Mount
Margery J. Lord (Va.)_____Asheville
H. M. Parker, Jr. (S. C.)__Statesville
L. L. Simmons (Tenn.)___Greensboro
W. H. Venable (China)____Asheville
F. L. Whelpley (Missouri)_Goldsboro
T. H. Worrell (Va.)_____Mount Airy
J. T. Walker (Miss.)__Winston-Salem

ALPHABETICAL LIST OF MEMBERS OF MEDICAL SOCIETY WITH POSTOFFICE ADDRESSES

Those marked (*) were present at the annual convention at Pinehurst

Name	*Address*
Abel, J. F.	Waynesville
Abernethy, C. O.	Raleigh
Abernathy, H. N.	Denver
Abernethy, Miles B.	Reidsville
Achorn, J. W.	Pine Bluff
Adams, C. A.	Durham
Adams, C. E.	Gastonia
Adams, J. L.	Asheville
Adams, M. R. (Hon.)	Statesville
Adams, N. B.	Murphy
*Adams, R. K.	Raleigh
**Aiken, Alford	Wake Forest
*Alexander, J. R.	Charlotte
Allen, B. G.	Henderson
Allen, J. A.	New London
Allen, R. L.	Waynesville
Allgood, R. A.	Fayetteville
Allhand, J. M.	Cliffside
Ambler, C. P.	Asheville
Anders, McT. G.	Gastonia
Anderson, Abel	Denton
*Anderson, Albert	Raleigh
Anderson, C. A.	Burlington
Anderson, J. A.	McAdenville
Anderson, J. G.	Asheville
Anderson, J. N.	Albemarle
Anderson, J. R.	Morganton
*Anderson, T. E. (Hon.)	Statesville
*Anderson, W. H.	Wilson
Anderson, W. S.	Wilson
Andrews, C. R.	Asheville
Andrews, R. M.	Union Mills, R.F.D.
*Andrews, V. L.	Mount Gilead
Archer, I. J.	Black Mountain
*Armfield, R.	Marshville
Armstrong, C. W.	Troy
Arnold, L. J.	Lillington
*Asbury, F. E. (Hon.)	Worthville
Ashby, E. C.	Mount Airy
Ashby, T. B.	Mount Airy
Ashcraft, J. E.	Monroe
Ashe, J. R.	Charlotte
Ashworth, B. L.	Marion
*Ashworth, W. C.	Greensboro
Atkins, B. T.	Badin
Atkins, M. T.	Durham
Attmore, G. S. (Hon.)	Stonewall
Austin, F. DeC.	Charlotte
Austin, J. A.	Charlotte
Austin, J. W.	High Point
*Averitt, K. G.	Cedar Creek
Aydlett, H. T.	Elizabeth City
Aydlette, J. P.	Earl
Baird, C. A.	Mount Airy
*Baker, J. M. (Hon.)	Tarboro
Baker, W. C.	Arden
Banner, C. W.	Greensboro
Barber, Y. M.	
Barefoot, M. L.	Dunn
Barnes, B. F.	Elm City
*Bass, H. H.	Henderson
Bass, S. P.	Tarboro
Battle, G. C.	Asheville
Battle, I. P.	Rocky Mount
Battle, J. P.	Nashville
Battle, J. T. J.	Greensboro
Battle, K. P. (Hon.)	Raleigh
Battle, S. W. (Hon.)	Asheville
Beall, L. G.	Asheville
Beall, W. P. (Hon.)	Greensboro
Beard, G. C.	Kerr, R.F.D.
Beckwith, R. P.	Rosemary
Bell, A. E.	Mooresville
Bell, G. M.	Wakefield
Bellamy, Robt. H.	Wilmington
Bellamy, W. J. H. (Hon.)	Wilmington
Belton, J. F.	Winston-Salem
Bennett, A. McD.	Bryson City
Bennett, P. R.	Bryson City
Best, H. B.	Wilson
Biggs, M. H.	Rutherfordton
*Bitting, N. D.	Durham
*Bizzell, T. M.	Goldsboro
Black, O. R.	West Jefferson
*Blair, A. McN.	Southern Pines
Blair, M. P.	Marshville
Blalock, N. M.	McCullers
Blevins, Manley	Beaver Creek
*Blount, J. G.	Washington
*Blue, A. McN.	Carthage
Boddie, N. P. (Hon.)	Durham
Boice, E. S.	Rocky Mount
Bolles, C. P., Jr.	Wilmington
*Bolton, Mahlon (Hon.)	Rich Square
*Bonner, H. M.	New Bern
*Bonner, K. P. B.	Morehead City
*Booker, L. S.	Durham
Boone, W. H.	Durham
Booth, J. L.	Oxford

Name	*Address*
Booth, S. D. (Hon.)	Oxford
Bostic, W. C.	Forest City
Bowdoin, G. E.	Wilmington
Bowers, M. A.	Thomasville
Bowling, E. H.	Durham
Bowman, H. P.	Greensboro
Boyden, W. C.	China Grove
Boyette, E. C.	Charlotte
Boyles, A. C.	Durham
Boyles, J. H.	Greensboro
*Brackett, W. C.	Caroleen
Braddy, W. H.	Greensboro
Bradsher, W. A.	Roxboro
Brandon, W. D. R.	Kannapolis
Brantley, Hassell	Spring Hope
Brawley, M. H.	Salisbury
*Brawley, R. V.	Salisbury
Briggs, H. H.	Asheville
Brittle, P. C.	Conway
Brookshire, H. G., Leicester, R.F.D. 5	
Brown, Geo. A.	Mount Ulla
*Brown, G. W.	Raeford
Brown, H. H.	Asheville
Brown, J. S.	Hendersonville
Brownson, W. C.	Asheville
Bryan, L. D.	Sneed's Ferry
Bryson, D. R.	Bryson City
Buchanan, E. J.	Lexington
Buchanan, L. T.	Wake Forest
Buckner, J. M.	Swannanoa
Buckner, R. G.	Asheville
Buffalo, J. S.	Garner
*Bulla, A. C.	Winston-Salem
*Bullard, G. F.	Elizabethtown
*Bullitt, J. B.	Chapel Hill
Bullock, D. W. (Hon.)	Wilmington
Bullock, T. C.	Autryville
Bullock, W. B.	Hester
Bullock, W. J.	Belhaven
Bunn, J. J.	Mount Pleasant
Burbage, T. I.	Como
Burleson, L. N.	Concord, R.F.D.
Burleson, W. B.	Plum Tree
*Burns, W. M.	Goldston
Burrus, J. T.	High Point
Burt, B. W.	New Hill
Burt, S. P.	Louisburg
Busby, J. G.	Spencer
*Byerly, A. B.	Cooleemee
Bynum, C. M.	Aurora
Bynum, John	Winston-Salem
Caldwell, D. G. (Hon.)	Concord
Caldwell, J. M.	Gastonia
Caldwell, W. H.	Snowden
Calloway, A. W.	Asheville
Campbell, J. I.	Norwood
Cannady, S. H.	Oxford
Carpenter, F. A.	Statesville
*Carlton, R. L.	Kernersville
Carr, R. L.	Rose Hill
*Carroll, Delia Dixon	Raleigh
Carroll, J. L.	Hookerton
Carroll, J. W.	Wallace
Carstarphen, W. T.	Wake Forest
Carter, G. H.	Kings Creek, R.F.D.
*Carter, H. W.	Washington
Cathell, Jas. Edwin, Linwood, R.F.D. 1	
Caton, G. A.	New Bern
Cauble, H. H.	Kannapolis
Causey, P. P.	Wilmington
Caveness, Z. M.	Raleigh
Champion, C. O.	Mooresboro
Chapin, H. T.	Pittsboro
*Cheatham, Arch	Durham
*Cheek, C. E.	Fuquay Springs
Cheeseborough, T. P.	Asheville
Choate, G. W.	Rockwell
*Clark, E. S.	Clarkton
Clark, G. L. (Hon.)	Clarkton
Clemenger, F. J.	Asheville
Clifford, Jno. S.	Charlotte
Clodfelter, C. M.	Lexington
Cobb, W. H.	Goldsboro
Cocke, C. H.	Asheville
Cocke, E. R.	Asheville
Cocke, J. E.	Asheville
Codington, H. A.	Wilmington
Coe, S. S.	High Point
*Coffey, L. H.	Lenoir
Colby, C. DeW.	Asheville
Cole, W. F.	Greensboro
Coletrane, Wallace E.	Dunn
Colvard, J. W.	Jefferson
Cooke, Q. H.	Woodland
*Cooper, G. M.	Raleigh
Cooper, J. A.	Bryson City
Coppage, T. O.	Nashville
Coppedge, N. P.	Ellerbe
Corpening, O. J.	Granite Falls
Costello, M. J.	Asheville
Costner, Thos. E.	Lumberton
Cotton, C. E.	Black Mountain
*Cox, B. W.	Goldsboro
Cox, E. B.	Jacksonville
*Cox, G. S.	Tabor
Cox, Thos. A.	Hertford
Cozart, W. S.	Holly Springs
*Craven, F. C.	Ramseur
Craven, W. W.	Huntersville

Name	*Address*
Crawford, J. M.	Asheville
Crocker, W. D.	Warsaw
Cromartie, R. S.	Garland
Croom, A. B.	Wilmington
Crouch, A. McR.	Raleigh
*Crowell, A. J.	Charlotte
*Crowell, L. A.	Lincolnton
*Crumpler, Paul	Clinton
Cummings, M. P.	Reidsville
Currie, E. W.	Salisbury
*Daligny, Charles	Troy
Dalton, D. N.	Winston-Salem
Dalton, W. N.	Winston-Salem
Dameron, E. L.	Star
*Daniel, N. C.	Oxford
*Daniels, O. C.	Goldsboro
*Davidson, J. E. S.	Charlotte
*Davis, Jos. F.	Glendon
Davis, R. B.	Weeksville
Davis, T. W.	Winston-Salem
Davis, W. W.	Belmont
Dawson, W. W.	Grifton
Dearmen, J. McC.	Charlotte
Dees, D. A.	Bayboro
*Dees, R. E.	Greensboro
Dees, R. O.	Greensboro
DeHart, James	Bryson City
Denchfield, A. L.	Asheville
Denny, W. W. (Hon.)	Pink Hill
*Denson, H. A.	Bennett
Dick, J. V.	Gibsonville
Dickinson, E. T.	Wilson
*Dickson, A. P.	Raeford
Dillard, Richard (Hon.)	Edenton
Divers, G. T.	Mount Airy
Dixon, G. E.	Hendersonville
*Dodson, H. H. (Hon.)	Greensboro
Dosher, Julius A.	Southport
Dowdy, J. E.	Winston-Salem
Drafts, A. B.	Hendersonville
Duffy, Leinster	New Bern
Duffy, R. N. (Hon.)	New Bern
Duncan, J. E.	North Wilkesboro
Dunn, W. L.	Asheville
Earnhardt, J. M.	Mount Pleasant
Easley, P. S.	Statesville
Eason, Oscar	Princeton
Eckel, O. F.	Asheville
Eddleman, H. M.	Gastonia
Edgerton, J. L.	Hendersonville
Edgerton, M. T., Jr.	Greenville
Edwards, A. D.	Winston-Salem
*Edwards, B. O.	Landis
Edwards, G. C. (Hon.)	Hookerton
*Edwards, J. D.	Siler City
*Elias, L. W.	Asheville
Eller, C. R.	Nathan's Creek
Ellington, S. B.	Wentworth
Elliott, W. F.	Lincolnton
Ellis, R. C.	Shelby
Erwin, E. A.	Laurinburg
Eubanks, J. B.	Monroe
Evans, L. B.	Windsor
Everett, A. C.	Rockingham
*Faison, I. W. (Hon.)	Charlotte
Faison, W. W. (Hon.)	Goldsboro
*Farthing, L. E.	Pittsboro
*Fassett, B. W.	Durham
Faucette, T. S.	Burlington
Fearing, Isaiah	Eliazbeth City
*Fearing, Zenas	Elizabeth City
*Fearington, J. P.	Winston-Salem
*Felts, R. L.	Durham
*Ferrell, J. A., 61 Broadway, New York	
*Finch, O. E.	Apex
Flack, R. E.	Asheville
Fletcher, M. H. (Hon.)	Asheville
Flippin, J. M.	Mount Airy
Flippin, R. E. L.	Pilot Mountain
*Flippin, S. T.	Siloam
*Flowe, J. W.	Kannapolis
Flowe, R. Frank	Kannapolis
Floyd, A. G.	Fair Bluff
Flynt, S. S.	Rural Hall
Foil, M. A.	Mount Pleasant
Fonts, J. H.	Franklin
Fortune, A. F.	Greensboro
Fowler, M. L.	Zebulon
Fowlkes, J. I.	Hamlet
Fox, L. M.	Asheboro
Fox, M. F. (Hon.)	Guilford College
*Fox, T. I.	Franklinville
Frazer, H. T.	Asheville
Freeman, R. A. (Hon.)	Burlington
Futrell, L. M.	Murfreesboro
Galloway, W. C. (Hon.)	Wilmington
Gambill, I. S.	Dobson
Gamble, J. R.	High Shoals
Gardner, G. D.	Asheville
Garren, R. H.	Monroe
Garrenton, Cecil	Bethel
Garrett, F. B.	Rockingham
*Garrett, F. J.	Rockingham
Garrett, Robt. H.	Bessemer City
Garris, Frank H.	Lewiston
Garrison, D. A.	Gastonia
Gary, R. H.	Murfreesboro

Name	*Address*
Gayle, E. M.	Morganton
Gibbon, R. L.	Charlotte
Gibbs, E. W.	Mooresboro
Gibbs, N. M.	New Bern
Gibson, J. S.	Gibson
Gibson, M. R.	Raleigh
Gill, J. N.	Weaverville
Gill, R. J.	Henderson
Gilmer, C. S.	Greensboro
Gilmer, B. H.	Cape Charles, Va.
Gilmore, W. D.	Mooresville
Gilreath, F. H.	North Wilkesboro
Ginn, T. L.	Goldsboro
*Glenn, E. B.	Asheville
Glenn, H. F.	Gastonia
*Glenn, L. N.	Gastonia
*Gold, C. F.	Ellenboro
Goley, W. R.	Graham
Goode, T. V., Jr.	Morganton
Goodman, A. B.	Lenoir
Goodman, Erastus G.	Lanvale
Goodwin, A. W.	Raleigh
*Gordon, J. R.	Raleigh
Gouger, G. J.	Concord, R.F.D.
Gove, Anna M.	Greensboro
Grady, J. C.	Kenly
Grady, L. Y.	Taylors
Grady, Wm. E.	Tryon
Graham, Benj. R.	Wilmington
Graham, G. A.	Raeford
Graham, Joseph	Durham
Graham, W. A.	Charlotte
Grantham, W. L.	Lumberton
Gray, E. P.	Winston-Salem
Grayson, C. S.	High Point
Greene, Arthur W.	Ahoskie
*Greene, J. B.	Asheville
*Greene, Thos. M.	Wilmington
Green, W. W.	Tarboro
Greenwood, A. B.	Fayetteville
Greenwood, S. E.	Fletchers, R.F.D.
Grier, S. A.	Harrisburg
Griffin, J. A. (Hon.)	Clayton
Griffin, L. M.	Asheville
Griffin, M. A.	Morganton
Griffin, T. A.	Clayton
Griffin, W. R.	Morganton
Griffith, F. W.	Asheville
Griggs, J. B.	Elizabeth City
Grimes, W. L.	Winston-Salem
Guin, L. E.	Waxhaw
*Hackney, B. H.	Bynum
*Halford, J. W.	Lillington
*Hall, J. C.	Albemarle
*Hall, J. K.	Richmond, Va.
Hall, Wright (Hon.)	Wilmington
Halsey, Wm. H.	Creswell
Hammock, J. C.	Walkertown
Hammond, A. F.	Pollocksville
Hamrick, J. Y.	Boiling Springs
Hamrick, T. G.	Shelby
Hand, E. H.	Pineville
*Hardee, P. R.	Stem
Hardy, I. M.	Kinston
Hargrove, R. H. (Hon.)	Robersonville
*Hargrove, W. F.	Kinston
Harper, J. H.	Snow Hill
Harrell, G. N.	Murfreesboro
Harrell, L. B.	Caroleen
Harrell, S. N.	Tarboro
Harris, A. G.	Fairfield
*Harris, F. R. (Hon.)	Henderson
Harris, I. A. (Hon.)	Alexander
Harris, J. H.	Franklinton
Harrison, Edmund	Greensboro
Harrison, H. H.	Mayodan
Harrison, J. S.	Elm City
Hart, E. R.	Wilmington
Hartsell, F. E.	Big Lick
Hartsell, J. A.	Concord
Harwood, P. C.	Apex, R.F.D.
Hassell, J. L.	Creswell
Hauser, O. J.	Charlotte
Hawes, S. J.	Dover
*Hays, Benj. K.	Oxford
Haywood, Hubert	Raleigh
Haywood, Hubert, J.	Raleigh
*Hayworth, C. A.	Coleridge
Hege, J. R.	Clemmons
Heilig, H. G.	Salisbury
Hemmenway, J. D.	Bethel
Henderson, R. B.	Franklinton
Henderson, S. McD.,	Charlotte, R.F.D.
Hennessee, E. A.	Glen Alpine
Herbert, Chas. S.	Asheville
Herbert, F. L.	Andrews
Herbert W. P.	Asheville
*Herring, B. S.	Wilson
Herron, A. M.	Charlotte
Hester, J. R.	Knightdale
*Hiatt, H. B.	High Point
Hickman, M. I.	Hudson
Hicks, C. S.	Durham
Hicks, I. F.	Dunn
Hicks, Romeo	Henrietta
Hicks, W. N. (Hon.)	Durham
Highsmith, Chas.	Dunn
*Highsmith, J. F.	Fayetteville
Highsmith, Seavy	Fayetteville

Name	*Address*
Highway, S. C.	Murphy
Hill, C. D.	Durham
*Hill, D. J.	Lexington
Hill, J. N.	Murphy
Hill, L. N. (Hon.)	Germanton
*Hill, W. I.	Albemarle
Hill, W. L.	Lexington, R.F.D. 4
Hilton, J. J.	Greensboro
Hinnant, Milford	Micro
Hobgood, J. E.	Thomasville
Hockett, L. E.	Summerfield
Hocutt, B. A.	Clayton
Hodges, J. M.	Cranberry
Hogaman, J. B.	Todd
Hoggard, W. A.	Woodville
*Hollingsworth, E. M.	Mount Airy
Hollingsworth, E. T.	Ivanhoe
Hollingsworth, R. E.	Mount Airy
Holloway, O. W.	Northside
Holloway, R. L.	West Durham
Hollyday, W. M.	Asheville
Holt, T. J.	Wise
Holt, R. D.	Cherokee
Holt, W. P.	Duke
Holt, W. T.	McLeansville
Hommett, Joe. Harry	Wilmington
Hoover, C. H.	Lincolnton, R.F.D.
Hoover, H. R.	Black Creek
Horsely, H. T.	Franklin
Horton, M. C.	Raleigh
Horton, W. C.	Raleigh
Horton, W. P.	North Wilkesboro
Houck, A. F.	Morganton
Howe, W. B. W.	Hendersonville
*Hoyle, H. B.	Biscoe
Hubbard, C. C.	Farmers
Hunnicutt, W. J.	Asheville
Hunter, J. Y.	Asheboro
Hunter, L. W. (Hon.)	Sardis
Hunter, N. C.	Laurbinurg
Huston, J. W.	Asheville
Hutchens, E. M.	North Wilkesboro
Hutchison, S. S.	Bladenboro
Hyatt, F. C.	Greensboro
Ingram, C. B.	Mount Gilead
Irwin, J. R. (Hon.)	Charlotte
Izlar, H. L.	Winston-Salem
Jackson, C. C.	Yeatesville
*Jackson, W. L.	High Point
*James, W. D.	Hamlet
Jarboe, P.	Greensboro
Jenkins, C. L.	Raleigh
Jenkins, J. H.	Gastonia
Jerome, J. R.	Wingate

Name	*Address*
Jewett, R. D.	Winston-Salem
*John, Peter	Laurinburg
Johnson, Alice E.	Asheville
Johnson, B. C.	Bunn
Johnson, J. B.	Old Fort, R.F.D.
*Johnson, J. G.	Charlotte
Johnson, Lee	Gastonia
Johnson, N. M. (Hon.)	Durham
Johnson, R. W.	Apex
Johnson, T. C.	Lumberton
Johnson, W. A.	Reidsville
Johnson, W. C.	Canton
Johnson, W. M.	Winston-Salem
Johnson, W. W.	Manteo
Jonas, J. F.	Marion
Jones, Alex. F.	Ararat, R.F.D. 1
Jones, A. Lee	Brandon
Jones, Clara E.	Goldsboro
Jones, R. D.	New Bern
Jones, Thos. J.	Lansing
Jones, T. Lester	Lansing
Jones, U. G.	West Jefferson
*Jones, Wm. M., Jr.	Greensboro
Jordan, A. C.	Durham
*Jordan, T. M. (Hon.)	Raleigh
*Jordan, W. S.	Fayetteville
Joyner, T. O.	Severn
*Juat, Francis	Raeford
Judd, E. C.	Raleigh
Judd, J. M.	Cardenas
Julian, C. A.	Thomasville
Justice, G. B.	Marion
Kafer, O. O.	Edward
Kapp, H. H.	Winston-Salem
Keiger, A. R.	Winston-Salem
Kendrick, R. L.	Elizabeth City
Kennedy, Geo. W.	Beulaville
Kent, A. A.	Lenoir
*Kerns, T. C.	Durham
*Kibler, W. H.	Morganton
Killiam, R. B.	Lincolnton, R.F.D.
*King, M. N.	Durham
King, R. M.	Concord
Kinsman, H. F.	Hamlet
Kirby, G. S.	Marion
Kirk, W. R.	Hendersonville
*Kitchin, T. D.	Scotland Neck
Kizer, W. C.	Reepsville
Knight, J. B. H.	Wilmington
Knight, W. P.	Greensboro
Knoefel, A. E.	Black Mountain
*Knox, A. W. (Hon.)	Raleigh
Koonce, S. E.	Wilmington
Kornegay, G. E.	Kinston
Kornegay, L. W.	Rocky Mount

Name	*Address*
Lafferty, J. S.	Shelby
*Lafferty, R. H.	Charlotte
Lamm, I. W.	Lucama
*Lancaster, R. M.	Dobson
Land, M. J.	Asheville
Landen, J. F.	Chinquapin
Lane, J. L.	Rocky Mount
*Large, H. Lee	Rocky Mount
Lassiter, C. L.	Fremont
Lassiter, E. W.	Rich Square
Laster, P. D.	Moncure, R.F.D. 1
Laton, J. F.	Albemarle
Lattimore, E. B.	Shelby
Laughinghouse, C. O'H.	Greenville
Ledbetter, J. M.	Rockingham
Lee, S. P. J.	Dunn, R.F.D. 2
Lee, L. V.	Lattimore
Lee, R. E.	Lincolnton
Legwin, Jno. B.	Wilmington
Lentz, C. M.	Albemarle
Lewis, G. M.	Wilson
Lewis, H. W.	Jackson
Lewis, R. H. (Hon.)	Raleigh
*Lilly, J. M.	Fayetteville
*Linville, A. Y.	Winston-Salem
Lister, E. W.	Weeksville
Lister, J. L.	Jackson
Little, E. E.	Statesville, R.F.D.
Livingstone, Everett A.	Gibson
Lloyd, B. B.	Chapel Hill
Long, B. L.	Glen Alpine
*Long, B. L. (Hon.)	Hamilton
*Long, E. F.	Lexington
Long, E. M.	Oak City
Long, H. F.	Statesville
*Long, J. W. (Hon.)	Greensboro
Long, M. T.	Newland
*Long, V. M.	Winston-Salem
*Lott, H. S.	Winston-Salem
Love, W. J. (Hon.)	Wilmington
Lowery, J. R.	Raleigh
Lucas, W. H. G.	White Oak
Lyday, C. E.	Albemarle
Lyle, S. H.	Franklin
Lynch, J. M.	Asheville
McAdams, C. R.	McAdenville
McAnally, W. J.	High Point
*McBrayer, L. B.	Sanatorium
*McBrayer, Reuben	Sanatorium
McBrayer, T. E.	Shelby
McCain, H. W.	High Point
*McCain, P. P.	Sanatorium
*McCain, W. R.	Waxhaw
McCampbell, John	Morganton
McCanless, W. L.	Danbury
McCanless, W. V.	Danbury
McCombs, C. J.	Gastonia
MacConnell, J. W.	Davidson
McCotter, S. E.	Bayboro
*McCoy, T. M.	Mount Holly
*McCracken, C. M.	Fairview
McCracken, J. R.	Waynesville
*McCuiston, A. M.	Richlands
McDaniels, L. E.	Lasker
*McDonald, A. A.	Jackson Springs
McDonald, A. D. (Hon.)	Wilmington
McDowell, F. C.	Zebulon
McElwee, Ross S.	Statesville
*McFayden, P. R.	Concord
McGeachy, R. S.	Raleigh
McGee, J. W.	Raleigh
McGehee, J. W.	Reidsville
*McGougan, J. V.	Fayetteville
McIntosh, D. M.	Old Fort
*McIntosh, W. P.	Roberdel
*McIver, Lynn	Sanford
McKay, J. F.	Buie's Creek
*MacKethan, D. G.	Fayetteville
*MacKethan, J. A.	Fayetteville
McLaughlin, J. E.	Statesville
McLaughlin, S. C.	Charlotte
McLean, Allen	Wagram
McLean, J. W.	Godwin
McLemore, G. A.	Clayton
*McLeod, A. H.	Aberdeen
McLeod, G. M.	Carthage
McManus, W. L.	Bonlee
*McMillan, B. F. (Hon.)	Red Springs
McMillan, F. W. (Hon.)	Edenton
McMillan, J. L. (Hon.)	Red Springs
*McMillan, John M.	Hemp
McMillan, W. D. (Hon.),	Wilmington
*McNairy, C. B.	Kinston
McNeill, J. W. (Hon.)	Fayetteville
*MacNider, W. deB.	Chapel Hill
*McPhail, L. D.	Rockingham
*McPherson, C. W.	Burlington
*McPherson, S. D.	Durham
*Macon, G. H.	Warrenton
Macon, P. J.	Warrenton
Mallett, E. P.	Hendersonville
Malloy, S. A.	Yanceyville
Malone, J. E.	Louisburg
*Mann, I. T.	High Point
Manning, I. H.	Chapel Hill
Manning, J. M.	Durham
*Marr, M. W.	Pinehurst
*Marriott, H. B.	Battleboro
Martin, J. A.	Lumberton

Name	*Address*
*Martin, J. F.	Benson
Martin, J. H.	Red Oak
Martin, M. S.	Mount Airy
Martin, S. S.	Leaksville
Martin, W. C.	Mocksville
*Matthews, J. H.	Vass
Matthews, J. O.	Clinton
*Matthews, M. L.	Cameron
Matthews, Thos. A.	Castalia
Matthews, Wm. W.	Spray
Maxwell, J. F.	Pine Hill
Mayberry, I. W.	Selma
Meadows, E. B.	Oxford
Meadows, W. J.	Greensboro
Mebane, W. C.	Wilmington
*Meisenheimer, C. A. (Hon.),	Charlotte
Meisenheimer, T. T. (Hon.)	Morven
Melvin, W. C.	Linden
Meriwether, B. M.	Asheville
Michaux, E. R.	Greensboro
Miles, Mary S.	Greensboro
*Miller, J. F.	Asheboro
Miller, K. E.	Tarboro
Miller, R. B.	Goldsboro
Mimms, C. W.	Winston-Salem
Minor, C. L.	Asheville
Mitchell, J. H.	Ahoskie
Mitchell, P. H.	Ahoskie
Mitchell, W. F.	Shelby
*Mitchener, J. S.	Kinston
Mock, F. L.	Lexington, R.F.D. 3
Monk, H. D.	Trenton
Monk, H. L.	Spencer
*Monroe, J. P.	Sanford
*Monroe, W. A.	Sanford
Montgomery, J. C.	Charlotte
Moore, A. W.	Charlotte
*Moore, C. E.	Greensboro
Moore, C. E. (Hon.)	Wilson
Moore, E. G.	Elm City
*Moore, K. C.	Wilson
Moore, J. E.	Mount Olive
Moore, Oren	Charlotte
Moore, W. H.	Wilmington
Moore, W. J.	Asheboro
Moorefield, R. H.	Westfield, R.F.D.
Morphew, F. M.	Marion
Morris, E. R.	Asheville
Morris, J. A.	Oxford, R.F.D. 2
*Morrow, W. C.	Andrews
Morton, N. D.	Norlina
Moseley, C. W.	Greensboro
Moseley, Z. V.	Kinston
Moser, W. D.	Burlington
*Mudgett, W. C.	Southern Pines
Mull, Wm. P., U. S. Training Station	Norfolk
*Murphy, J. G.	Wilmington
*Myers, J. Q.	Charlotte
Nalle, B. C.	Charlotte
Nance, G. B.	Monroe
Nash, Fred	St. Paul's
*Neal, Jno. W.	Monroe
Nelson, R. J.	Robersonville
Newby, G. E.	Hertford
Newell, H. A.	Louisburg
Newell, J. O.	Henderson, R.F.D. 6
Newell, L. B.	Charlotte
*Newman, H. H.	Salisbury
Nichols, A. A.	Sylva
Nichols, A. S.	Sylva
Nichols, R. E.	Durham
Nicholson, C. R.	Harmony
Nicholson, J. L. (Hon.)	Richlands
*Nicholson, P. A.	Washington
Nisbet, W. O.	Charlotte
Noble, R. J. (Hon.)	Selma
Nobles, J. E. (Hon.)	Greenville
Norman, G. W.	Greensboro
Norman, J. S.	Bladenboro
Norton, N. D.	Norlina
Oats, Geo.	Grover
Ogburn, H. H.	Greensboro
Olive, P. W.	Wade
Olive, W. W.	Durham
Oliver, A. S.	Greensboro
Oney, H. B.	Goldsboro
Orr, C. C.	Asheville
Orr, C. V.	Andrews
Page, B. W.	Lumberton
Palmer, B. H.	Shelby
*Palmer, R. D.	Gulf
Parker, C. G.	Woodland
Parker, G. E.	Benson
Parker, H. P.	Candler
*Parker, J. R.	Burlington
Parrott, A. D.	Kinston
*Parrott, J. M.	Kinston
*Parrott, W. T.	Kinston
Pate, F. J.	Greensboro
Pate, James G.	Gibson
Pate, W. T.	Gibson
Patrick, L. N.	Gastonia
Patterson, J. A.	Concord
Patterson, J. F.	New Bern
Patterson, Reid	Charlotte
Payne, R. L.	Monroe
Peacock, W. J.	Thomasville
*Peeler, C. N.	Charlotte
Peeler, J. H.	Granite Quarry

Name	*Address*
Peete, C. H.	Warrenton
Pegram, R. W. S., Wilkesboro, R.F.D.	
Pemberton, W. D. (Hon.)	Concord
Penfield, Perle P.	Greensboro
Pennington, S. E.	Sturgills
*Penny, J. A. J.	Neuse
*Pepper, J. K.	Winston-Salem
Perkins, D. R.	Marshville
*Perkins, J. R.	Winston-Salem
Perry, A. H.	Eagle Rock
Perry, Ernest M.	Louisburg
Perry, H. G.	Wood
Perry, M. P. (Hon.)	Macon
Perkins, S. S.	Jefferson
Person, E. C.	Pikeville
Person, J. B., Jr.	Selma
Person, T. E.	Stantonburg
Peters, W. A.	Elizabeth City
*Petrie, R. W.	Charlotte
Petteway, G. H.	Charlotte
Pfohl, S. F.	Winston-Salem
Pharr, T. F. (Hon.)	Harrisburg
*Pharr, W. W. (Hon.)	Charlotte
Phifer, E. M.	Morganton
*Phillips, C. C.	Wallburg
Phillips, M. D.	Dalton
Picot, L. J. (Hon.)	Littleton
Pierce, H. L.	Locust
*Pittman, R. L.	Fayetteville
Pitts, W. I.	Lenoir
Pollard, W. B.	Winton
Pope, H. T.	Lumberton
Potter, W. T.	Aurora
Powell, H. H.	Stantonburg
Powell, Jessie A.	Harrellsville
Powell, R. A.	Fayetteville
*Pressly, G. W.	Charlotte
*Prince, D. M. (Hon.)	Laurinburg
Pritchard, A. T.	Asheville
Pritchard, J. L.	Windsor
Proffitt, T. J.	Elk Park
Purdy, J. J.	Oriental
Puett, Bess V.	Oriental
Pugh, C. H.	Stanley
Purefoy, G. W.	Asheville
Putney, R. H.	Elm City
Query, R. Z.	Charlotte, R.F.D.
Quickel, T. C.	Gastonia
Quillen, E. B.	Rocky Mount
Quinn, R. F.	Magnolia
Raby, J. C.	Leggett
Ramseur, G. A.	China Grove
*Rankin, W. S.	Raleigh
Ransom, J. L.	Pineville, R.F.D.
Ray, Jno. B.	Leaksville
Ray, O. L.	Raleigh, R.F.D.
Ray, R. C.	Beaver Creek
Reaves, C. R.	Greensboro
Reaves, W. Perry	Greensboro
Reece, J. M.	Elkin
Reed, D. H.	Beaufort
Reeves, A. F.	Asheville
Reeves, J. L.	Whittier
*Register, F. M.	Jackson
Reid, G. P.	Forest City
Reid, John Franklin	Concord
Reid, J. W.	Lowell
Reid, Wm. K.	Charlotte
*Reitzel, C. E.	High Point
Reynolds, C. V.	Asheville
Rhodes, J. S.	Williamston
Rhyne, R. E.	Mount Holly
Rich, J. C.	Candler
Richardson, W. J.	Greensboro
Riddle, J. B.	Morganton
Rieves, J. T.	Greensboro
Riggsbee, A. E.	Morrisville
*Ring, J. W.	Elkin
Ringer, P. H.	Asheville
Ritter, F. W. (Hon.)	Moyock
Roberson, Chas.	Greensboro
*Roberson, Foy	Durham
Roberson, Mike	Durham
Roberts, H. C.	Coats
Robinson, Frank	Lowell
*Rodman, J. C.	Washington
Robinson, W. J.	Creston
Rodwell, J. W.	Mocksville
Rogers, J. R.	Raleigh
Rogers, W. A.	Franklin
Rogers, W. D., Jr.	Warrenton
*Root, A. S.	Raleigh
Rose, A. H.	Smithfield
*Ross, G. H.	East Durham
*Ross, O. B.	Charlotte
Rosser, R. G.	Rock Fish
Rowe, H. B.	Mount Airy
Rowe, R. H.	Bessemer City
Royal, B. F.	Morehead City
*Royall, M. A.	Elkin
*Royster, H. A.	Raleigh
Royster, S. S.	Shelby
Royster, W. I. (Hon.)	Raleigh
Rucker, A. A.	Rutherfordton
Ruff, F. R.	Duke
Russell, C. R.	Granite Falls
*Russell, E. R.	Asheville
Russell, F. F.	Canton
Russell, J. M.	Canton

Name	*Address*
*Sadelson, G. H.	Charlotte
Saine, J. W.	Lincolnton
Saliba, John	Elizabeth City
Salley, E. McQ.	Saluda
Salmons, L. R.	Winston-Salem
Saunders, J. H.	Williamston
Saunders, Sheldon A.	Aulander
Sawyer, C. J.	Windsor
Sawyer, W. W.	Elizabeth City
Schallert, P. O.	Winston-Salem
*Schaub, O. P.	Winston-Salem
Schenck, E. R.	Rutherfordton
Schonwald, J. L. (Hon.)	Wilmington
Schoonover, R. A.	Greensboro
Sessons, E. T.	Turkey
*Sevier, D. E.	Asheville
*Sevier, J. T.	Asheville
Sexton, C. H.	Dunn
Shafer, I. E.	Gold Hill
Schaffner, T. F. (Hon.)	Winston-Salem
*Shamburger, J. B.	Star
Sharp, C. R.	Lexington
*Shaw, W. G.	Wagram
*Sherrill, W. H.	Sanatorium
*Shields, H. B.	Carthage
*Shore, C. A.	Raleigh
Shull, J. R.	Cliffside
*Sidbury, J. B.	Wilmington
Sigman, F. G.	Spencer
Sikes, G. L.	Salemburg
*Sikes, G. T. (Hon.)	Grissom
Siler, F. L.	Franklin
Singletary, G. C.	Clarkton
Sink, C. S.	North Wilkesboro
Sloan, J. M.	Gastonia
Slocum, R. B.	Wilmington
Sloop, E. H.	Crossnore
Smith, A. T.	Greenboro
Smith, B. R.	Asheville
Smith, G. A.	Black Creek
Smith, J. A.	Lexington
Smith, J. B.	Pilot Mountain
Smith, J. T.	Westfield
*Smith, L. J.	Wilson
Smith, Owen, H.	High Point
Smith, R. A. (Hon.)	Goldsboro
Smith, R. W.	Hertford
*Smith, W. H.	Goldsboro
*Smithwick, J. E.	Jamesville
Smoot, J. E.	Concord
Smoot, M. L.	Fayetteville
Snipes, E. P.	Jonesboro
Sorrell, L. P.	Raleigh, R.F.D.
Sossaman, J. C.	Midland
Spainhour, E. H.	Winston-Salem
Speight, J. A.	Rocky Mount
Speight, J. P.	Rocky Mount
Speight, J. W.	Roper
Speight, R. H., Sr. (Hon.)	Whitakers, R.F.D.
Spencer, F. B.	Salisbury
*Spencer, W. O.	Winston-Salem
Spicer, John	Goldsboro
Spoon, O. A.	Greensboro
*Spruill, J. L.	Columbia
Staley, S. W.	Rocky Mount
Stancell, W. W.	Raleigh
Stanton, D. A.	High Point
Stanton, T. M.	High Point
Starr, H. F.	Greensboro
Staton, L. L. (Hon.)	Tarboro
Steele, W. C.	Mount Olive
Stephens, W. L.	Indian Town
Stephenson, M. R.	Seaboard
Sterrett, J. R.	West Durham
Stevens, J. A. (Hon.)	Clinton
Stevens, M. L.	Asheville
*Stevens, S. A.	Monroe
*Stewart, H. D.	Monroe
Stokes, J. E.	Salisbury
Stovie, J. G.	Proctor
*Street, M. E.	Glendon
Strickland, E. L.	Wilson
Strickland, J. T.	Nashville
Strickland, W. J.	Moncure
Stringfield, S. L.	Waynesville
Strong, C. M.	Charlotte
Strong, W. M.	Charlotte
*Strosnider, C. F.	Goldsboro
Sturgis, S. B.	Lenoir
Sturgis, Margaret	Lenoir
Summerell, E. N. (Hon.)	China Grove
Summers, C. L.	Winston-Salem
Sumner, T. W.	Fletcher
Sutton, C. A.	Beaufort
Sutton, C. W.	Richlands
Sutton, J. R.	Elk Park
Sutton, W. G.	Seven Springs
Sweeney, John	Durham
Swett, W. P.	Southern Pines
Swindell, C. L.	Wilson
Talley, J. S.	Troutmans
*Tankersley, J. W.	Wilmington
*Tate, C. S.	Ramseur
Tate, W. C.	Banner Elk
Tayloe, D. T. (Hon.)	Washington
Taylor, F. R.	High Point
Taylor, I. M. (Hon.)	Morganton
*Taylor, J. T.	Madison

Name	*Address*
Taylor, Thos. G.	Leaksville
Taylor, W. S.	Mount Airy
Templeton, J. M.	Cary
Tennent, G. S.	Asheville
Terrell, A. J.	Black Mountain
Terry, J. R.	Lexington
Terry, P. R.	Asheville
*Terry, W. C.	Hamlet
Testerman, J. C.	Jefferson
Thigpen, W. J.	Tarboro
Thomas, G. G. (Hon.)	Wilmington
*Thomas. W. N.	Oxford
*Thompson, A. F.	Troy
Thompson, C. D.	Lincolnton
Thompson, Fred.	Pine Bluff
*Thompson, Cyrus	Jacksonville
Thompson, J. B.	Bostic, R.F.D. 1
Thompson, Joe	Creedmore
Thompson, N. A.	Lumberton
Thompson, S. R.	Charlotte
Thompson, S. W.	Neuse
Thompson, S. W., Jr.	Sanatorium
Thompson, W. A.	Rutherfordton
Tidwell, J. E.	Andrews
Timberlake, R. E.	Youngsville
Toole, A. F.	Asheville
Trautham, H. L. (Hon.)	Salisbury
Troxler, R. M.	Burlington
Tugman, B. W.	Warrensville
Tull, Henry (Hon.)	Kinston
Turner, J. M.	North Wilkesboro
Turner, J. P.	Greensboro
Tuttle, A. F.	Spray
Tuttle, R. G.	Walnut Cove
Twitty, J. C.	Rutherfordton
Tydeman, F. W. L.	Tulsa, Oklahoma
Tyson, T. D.	Pleasant Garden
*Underwood, O. E.	Roseboro
Utley, H. H.	Benson
*Valk, A. deT.	Winston-Salem
*Van Poole, C. M. (Hon.)	Salisbury
Vernon, J. W.	Morganton
Vestal, Willis J.	Lexington
Vick, G. D.	Selma
Von Ruck, K.	Asheville
Von Ruck, S. H.	Asheville
Wadsworth, W. H.	Concord
Walker, C. E.	Charlotte
*Walker, H. D.	Elizabeth City
Walker, J. B.	Gibsonville
Walker, L. A.	Burlington
Walker, L. K.	Ahoskie
Walker, W. E.	Burlington
*Wall, R. L.	Winston-Salem
*Wallace, J. W.	Concord
Ward, J. E.	Robersonville
Ward, V. A.	Robersonville
Ward, W. H. (Hon.)	Plymouth
Warlick, E. S.	Morganton
Warren, R. L.	Dunn
Warren, W. E.	Williamston
*Washburn, B. E.	Wilson
Watkins, F. B.	Morganton
Watkins, G. S.	Oxford
Watkins, G. T.	Durham
Watson, J. B.	Raleigh
Watson, Leon	Broadway
*Way, J. H. (Hon.)	Waynesville
Weaver, H. B. (Hon.)	Asheville
Weaver, W. J.	Asheville
Webb, B. G.	Andrews
Webb, S. E.	Dräper
Webb, W. P.	Rockingham
*Wellborn, W. R.	Elkin
Wessell, J. C.	Wilmington
West, R. M.	Salisbury
*West, T. M.	Fayetteville
Wharton, L. D.	Smithfield
*Whisnant, A. M.	Charlottee
Whitaker, A. C.	Julian
Whitaker, F. A.	Kinston
Whitaker, F. S.	Kinston
Whitaker, R. A. (Hon.)	Kinston
White, J. W.	Wilkesboro
White, W. M.	Lenoir
Whitehead, J. P.	Rocky Mount
Whitehead, John (Hon.)	Salisbury
Whitfield, W. C.	Grifton
Whitley, A. D. N.	Unionville
Whitley, D. P.	Albemarle
Whittington, J. B.	Winston-Salem
Whittington, W. P. (Hon.)	Asheville
Wiggins, J. C.	Winston-Salem
Willcox, J. W.	Laurel Hill
Wilkes, Grover	Haw River
Wilkerson, C. B.	Apex
Wilkerson, C. E.	Randleman
Wilkins, R. B.	Raeford
Wilkins, S. A.	Dallas
Williams, A. F.	Wilson
Williams, B. B.	Greensboro
Williams, C. B.	Elizabeth City
*Williams, J. A.	Greensboro
Williams, J. D.	Guilford
Williams, John Hey (Hon.)	Asheville
Williams, J. M.	Warsaw
Williams, J. R.	Asheville
Williams, J. W.	Everitts

Name	*Address*
Williams, L. L.	Union Mills
Williams, R. C.	Wallace
Willingham, Benj. Jas.	Wilmington
Willis, B. C.	Rocky Mount
Wilson, A. R. (Hon.)	Greensboro
Wilson, C. L.	Lenoir
Wilson, F. G.	Gastonia
Wilson, James E.	Canton, R.F.D.
Wilson, N. G.	Summerfield
Wilson, R. B.	Newton Grove
Wilson, T. H.	Lucama
Wilson, W. P.	Madison
Wise, J. S.	Lincolnton
Wiseman, C. B.	Henrietta
*Witherspoon, B. J.	Charlotte
Woltz, J. L.	Mount Airy
*Wood, Edward J.	Wilmington
Wood, J. W.	Shelby, R.F.D. 3
Woodard, A. G.	Burlington
Woodson, C. W.	Salisbury
Wooten, A. M.	Pinetops
*Wright, J. B.	Raleigh
Wright, T. H.	Charlotte
*Yarborough, R. F.	Louisburg
*Yokeley, R. V.	Lexington
York, A. A.	Linwood, R.F.D. 2
York, H. B.	Williamston
Young, G. M.	———
Young, J. J.	Clayton
Young, L. B.	Rolesville
Yow, Iva A.	Georgeville
Zimmermann, R. U.	Lexington

ROSTER OF MEMBERS FOR 1918 BY COUNTIES

NOTE.—Every physician in the State whose name we could secure has had an opportunity to supply correct information as to his name, postoffice, academic and medical education, date of State license, and date of State Society was joined. A few did not take advantage of the opportunity, however. Any one finding an error should report it to the secretary of the society, so that the report for next year will be correct.

ALAMANCE COUNTY SOCIETY

Name and Address	*Licensed*	*Joined State Society*
Anderson, Chas. Alexander, Burlington P. and S., Balt., 1901.	1893	1896
Faucette, T. S., Burlington Balt. M. C., 1892.	1893	1916
Freeman, R. A. (Hon.), Burlington	----	----
Goley, Wm. R., Graham P. and S., Balt., 1885.	1885	1893
McPherson, C. W., Burlington Univ. of Md., 1910.	1910	----
Moser, W. D., Burlington Univ. of N. C., 1910.	1910	----
Parker, J. Rainey, Burlington	----	----
Troxler, R. M., Burlington Univ. of Md., 1914.	1914	1915
Walker, L. A., Burlington Univ. Coll. of Med., Va., 1898.	1899	1904
Walker, Walter Erwin, Burlington Med. Coll. of Va., 1903.	1903	1903

ALEXANDER COUNTY SOCIETY

(SEE IREDELL-ALEXANDER)

ALLEGHANY COUNTY SOCIETY

(No members in good standing.)

ANSON COUNTY SOCIETY

President,	----	----
Secretary,	----	----
Meisenheimer, T. T. (Hon.), Morven	----	----

ASHE COUNTY SOCIETY

President, T. J. Jones, Lansing Lincoln Memorial University, Knoxville, 1895.	----	----
Secretary, U. G. Jones, West Jefferson Lincoln Memorial Univ., 1914.	1917	1917
Black, O. R., West Jefferson	----	----
Blevins, Manly, Beaver Creek C. P. and S., Balt., Md.	----	1916
Colvard, J. W., Jefferson	----	----
Eller, C. R., Nathan's Creek	----	----
Hogman, J. B. Todd Lincoln Mem. Univ., Knoxville, 1915.	1915	----
Jones, Arthur Lee, Brandon	----	----
Jones, T. L., Lansing Med. Coll. of Va.	1909	1917
Pennington, S. E., Sturgills	----	----
Perkins, S. L., Jefferson Baltimore Medical College, 1891.	1892	----

Name and Address	*Licensed*	*Joined State Society*
Ray, R. C., Beaver's Creek Med. Coll. of Va., 1916.	1916	1917
Robinson, W. J., Creston Univ. Med. College of Kansas City, 1904.	1907	----
Testerman, J. C., Jefferson	----	----
Tugman, B. W., Warrensville	----	----

AVERY COUNTY SOCIETY

President, W. C. Tate, Banner Elk Tenn. Med. Coll., 1908.	1909	1912
Secretary, Miles T. Long, Newland Med. Coll. of Va.; N. C. Med. Coll., 1916.	1916	1917
Burleson, W. B., Plumtree Univ. of Md. and the Coll. of P. & S., 1915.	----	1915
Hodges, Joseph M., Cranberry Univ. of Md., 1904.	1906	----
Proffitt, Thos. J., Elk Park Louisville Med. Coll., 1902.	1903	----
Sloop, Eustace H., Crossnore N. C. Med. Coll., 1905; Jeff. Med. Coll., 1908.	1905	1909
Sutton, J. R., Elk Park Univ. of the South, 1904.	1909	1911

BEAUFORT COUNTY SOCIETY

President, John Lawrence Nicholson, Washington Univ. of N. Y., 1875.	1880	----
Secretary, H. W. Carter, Washington Univ. of Va., 1895.	1895	1910
Blount, J. G., Washington Bellevue Hospital Med. Coll., 1892.	1892	----
Bullock, W. J., Belhaven Univ. of Va., 1857; Univ. of Pa., 1858.	----	1860
Bynum, C. ., Aurora	----	----
Jackson, C. C., Yeatesville P. and S., Balt., 1893.	1893	----
Kafer, Oswald O., Edward Univ. of Md., 1905.	1905	1916
Nicholson, P. A., Washington P. and S., Balt., 1889.	1889	1890
Potter, W. T., Aurora Med. Coll. of Va., 1910.	1910	1910
Rodman, J. C., Washington Bellevue Med. Coll., 1892.	1892	1895
Tayloe, D. T. (Hon.), Washington Bellevue Med. Coll., 1885.	1885	1885

BERTIE COUNTY SOCIETY

President, L. B. Evans, Windsor Univ. Coll. of Med., Va., 1900.	1900	1907
Secretary, Sheldon A. Saunders, Aulander	----	----
Garris, Frank H. Lewiston	----	----
Pritchard, John L., Windsor P. and S., Balt., 1906.	1906	1907
Sawyer, C. J., Windsor College of P. and S., Baltimore, 1895.	1895	----

BLADEN COUNTY SOCIETY

Name and Address	*Licensed*	*Joined State Society*
President. S. S. Hutchison, Bladenboro	----	----
Secretary. E. S. Clark, Clarkton	1914	----
M. C. of Va., 1914.		
Bullard. G. F., Elizabethtown	1915	1916
N. C. Med. Coll., 1915.		
Clark, Geo. L., Clarkton	1900	1904
Univ. of N. Y., 1876.		
Cromartie, R. S., Garland	----	----
Lucas. W. H. G., White Oak	1885	1875
Univ. of Phila., 1870.		
Norman. J. S., Bladenboro	1911	----
Univ. of Md. and the Coll. of P. and S., Balt., 1909.		
Singletary, G. C., Clarkton	----	----

BRUNSWICK COUNTY SOCIETY

President. Erastus G. Goodman, Lanvale	----	----
Secretary. Julius A. Dosher, Southport	----	----

BUNCOMBE COUNTY SOCIETY

President. Jos. B. Greene. Asheville	1910	1911
Univ. of Va., 1893.		
Secretary, C. H. Cocke, Asheville	1912	1913
Cornell, 1905.		
Adams, J. L., Asheville	1910	1913
Jefferson Med. Coll., 1910.		
Ambler. Chas. P., Asheville	1890	1891
West Reserv., 1889.		
Anderson. Jas. G., Asheville	1906	1908
Univ. of N. C., 1906.		
Andrews. C. R., Asheville	----	----
Archer. Isaac J., Black Mountain	1905	1906
Northwestern, 1896.		
Baker. W. C., Arden	1915	1916
Chattanooga M. C., 1908.		
Battle. George. C., Asheville	1912	1912
University of Md., 1912.		
Battle. Samuel Westray (Hon.)	1887	1887
Bellevue Med. Coll., N. Y., 1875.		
Beall. L. G., Asheville	----	----
Briggs. Henry H., Asheville	1901	----
Yale Univ. School of Med., 1897.		
Brookshire, Harley G., Leicester, R.F.D. 5	1905	1906
N. C. Med. Coll., 1905.		
Brown, H. H., Asheville	----	----
Brownson. Wm. Clarence, Asheville	1885	1896
Univ. of N. Y., 1878.		
Buckner, J. M., Swannanoa	1909	1912
Univ. of N. C., 1908.		
Buckner. Rufus G., Asheville	1907	1908
Univ. of Ark., 1897.		
Calloway. Arthur Wm., Asheville	1899	1904
Chicago Med. School; Harvard Med. School, 1895.		
Cheeseborough, T. P., Asheville	1891	1899
Univ. of N. Y., 1891.		
Clemenger, F. J., Asheville	1903	1903
Univ. of Denver, Med. Dept., 1902.		
Cocke, E. R., Asheville	----	----

Name and Address	*Licensed*	*Joined State Society*
Cocke, Jere E., Asheville	1905	1905
Louisville Med. Coll., 1905.		
Colby, C. D. W., Asheville	1909	1909
Army Med. Sc., 1895; U. of Mich., Med. Dept., 1893.		
Costello, M. J., Asheville	1909	1911
Medico-Chirurgical, Phila., 1896.		
Cotten, Clyde E., Asheville	1901	1901
Northwestern, 1889.		
Crawford, J. M., Asheville	1915	1916
Atlanta M. C., 1884.		
Denchfield, A. L., Asheville	1914	1915
U. and Bel. H., N. Y., 1905.		
Dunn, W. L., Asheville	1900	1900
Univ. of Mich., 1891.		
Eckel, O. F., Asheville	1907	1908
Med. Coll. of S. C., 1906.		
Elias, Lewis W., Asheville	1906	1906
Columbia Univ., 1903.		
Flack, R. E., Asheville	----	----
Fletcher, M. H. (Hon.), Asheville	1881	1881
Bell. Med. Coll., 1881.		
Frazer, H. T., Asheville	1908	1908
Coll. Phys., N. Y., 1901.		
Gardner, Garrett D., Asheville	1908	1908
Lincoln Memorial, 1908.		
Gill, Jas. Nelson, Weaverville	1894	1892
Vanderbilt Univ., 1889.		
Glenn, E. B., Asheville	1896	1899
Jefferson Med. Coll., 1896.		
Griffith, F. W., Asheville	1911	1912
Johns Hopkins, 1906.		
Griffith, L. M., Asheville	1916	1916
Johns Hopkins Med. School, 1915.		
Harris, I. A. (Hon.), Buncombe	1885	1881
Jefferson Med. Coll., Phila.		
Herbert, Chas. S.	----	----
Herbert, Wm. P., Asheville	1910	1911
Univ. of Va., 1907.		
Holliday, W. M., Asheville	1914	1915
Univ. of Md., 1908.		
Honnicutt, Wm. Joseph, Asheville	1908	1908
Univ. of Tenn., 1895.		
Huston, John Walter, Asheville	1912	1913
Rush, Chicago, 1904.		
Johnson, Alice E., Asheville	1906	1907
Woman's Med. Coll., Pa., 1905.		
Knoefel, A. E., Black Mountain	1914	----
Univ. of Louisville, 1893.		
Land, M. J., Asheville	----	----
Lynch, Jas. M., Asheville	1912	1913
Univ. of Md., 1904.		
McCracken, C. M., Fairview	1896	1904
N. C. Med. Coll., 1896.		
Meriwether, Benj. M.	1915	1916
Univ. of Louisville, Ky., 1915.		
Minor, Chas. L., Asheville	1895	1895
Univ. of Va., 1888.		
Morris, E. R., Asheville	1896	1899
Louisville Med. Coll., 1896.		
Orr, Chas. C., Asheville	1904	1907
Univ. of Med., 1904.		

Name and Address	*Licensed*	*Joined State Society*
Parker, H. P., Candler	----	----
Pritchard, Arthur T., Asheville Jefferson Med. Coll., Phila., 1905.	1905	1906
Purefoy, Geo. W., Asheville Jefferson Med. Coll., Phila., 1876.	1884	1904
Reeves, A. F., Asheville George Washington Univ., 1906.	1909	1910
Reynolds, C. V., Asheville Univ. of N. Y., 1895.	1895	1896
Rich, John Calvin, Candler Univ. of Nashville, 1908.	1908	1908
Ringer, Paul H., Asheville P. and S., N. Y., 1904.	1906	1907
Russell, E. Reid, Asheville Univ. of Md., 1895.	1895	1898
Sevier, D. E., Asheville Jefferson Med. Coll., Phila., 1895.	1895	1899
Sevier, J. T., Asheville Jefferson Med. Coll., Phila., 1895.	1895	1899
Smith, B. R., Asheville Jefferson Med. Coll., Phila., 1911.	1913	1913
Stevens, M. L., Asheville Balt. Med. Coll., 1891.	1892	1893
Tennent, G. S., Asheville N. C. Med. Coll., 1894.	1894	1894
Terrell, A. J., Black Mountain Univ. of N. C., 1908.	1908	1909
Terry, P. R., Asheville George Washington Univ., 1906.	1912	1913
Toole, A. F., Asheville	----	----
Von Ruck, K., Asheville Univ. of Tubingen, 1878.	1889	1889
Von Ruck, S. H. (deceased), Asheville Bellevue Med. Coll., 1899.	1899	1902
Weaver, H. B. (Hon.), Asheville Washington Univ., Balt., Md., 1872.	1881	1881
Weaver, W. J., Asheville Jefferson Med. Coll. of Phila., 1898.	1897	1915
Whittington, W. P. (Hon.) P. and S., Balt., 1882.	1882	1882
Williams, J. H. (Hon.), Asheville Med. Dept. Iowa S. Univ., 1863.	1881	1881
Williams, J. R., Asheville	----	----

BURKE COUNTY SOCIETY

President, T. V. Goode, Jr., Morganton Univ. Coll. of Med., Va., 1912.	1912	1916
Secretary, Finso B. Watkins, Morganton Jefferson Med. Coll., Phila., 1907.	1907	1910
Anderson, Jas. Robt., Morganton Tulane Univ., 1882.	1885	1903
Gayle, Edward M., Morganton Univ. of Va., 1902.	1902	1912
Griffin, M. A., Morganton	----	----
Griffin, Wm. Ray, Morganton Jefferson Med. Coll., Phila., 1910.	1910	1913
Hall, Jas. K., Richmond, Va. Jefferson Med. Coll., 1904.	1906	1906

Name and Address	*Licensed*	*Joined State Society*
Hennessee, Emanuel A. (deceased), Glen Alpine U. S. Grant Univ., 1900.	1902	1904
Houck, Albert F., Morganton P. and S., Balt., 1884.	1891	1893
Kibler, W. H., Morganton	----	----
Long, Benj. L., Glen Alpine N. C. Med. Coll., 1913.	1913	1914
McCampbell, John Morganton Balt. Med. Coll., 1894.	1895	1899
Phifer, Edward M. Morganton N. C. Med. Coll., 1901.	1902	1904
Riddle, Jas. B., Morganton Vanderbilt Univ., 1898.	1904	1904
Taylor, I. M. (Hon.), Morganton P. and S., N. Y., 1882.	1883	1883
Vernon, Jas. W., Morganton Jefferson Med. Coll., Phila., 1909.	1909	1913
Warlick, E. S., Morganton Vanderbilt Univ., 1881.	1881	1903

CABARRUS COUNTY SOCIETY

President,	----	----
Secretary,	----	----
Brandon, W. R., Kannapolis Univ. of Med., 1914.	1914	1916
Bunn, J. J., Mt. Pleasant N. C. Med. Coll., 1912.	1913	1915
Burleyson, L. N., Concord Univ. of Md., 1891.	1891	1894
Cauble, H. H., Kannapolis N. C. Med. Coll., 1907.	1907	1910
Earnhardt, J. M., Mt. Pleasant Univ. Coll. of Med., Va., 1913.	1914	1915
Foil, M. A., Mt. Pleasant Jefferson Med. Coll., 1891.	1891	1908
Flowe, J. W., Kannapolis N. C. Med. Coll., 1898.	1903	1903
Flowe, R. Frank, Kannapolis N. C. Med. Coll., 1913.	1914	1916
Gouger, George J., Concord Univ. of Md., 1891.	1891	1899
Grier, S. A., Harrisburg Jefferson Med. Coll., 1879.	1885	1904
Hartsell, J. A., Concord Jefferson Med. Coll., 1912.	1914	1916
King, Richard M., Concord Jefferson Med. Coll., Phila., 1903.	1903	1905
McFayden, Paul R., Concord Med. Coll. of Va., 1901.	1901	1904
Patterson, John A., Concord Univ. Coll. of Va., 1911.	1911	1912
Pharr T. F. (Hon.), Harrisburg Bellevue Med. Coll., 1877.	1881	1881
Rankin, S. W., Concord Jefferson Med. Coll., Phila., 1912.	1912	1914
Reid, John Franklin, Concord Univ. of N. Y., 1893.	1909	1912
Smoot, J. E., Concord Balt. Med. Coll., 1893.	1894	1902

Name and Address	*Licensed*	*Joined State Society*
Sossaman, J. C., Midland	----	----
Wadsworth, Wm. H., Concord	1913	1913
Jefferson Med. Coll., Phila., 1911.		
Wallace, J. W., Concord	1907	1908
N. C. Med. Coll., 1907.		
Yow, Iva A., Georgeville	1907	1910
N. C. Med. Coll., 1906.		

CALDWELL COUNTY SOCIETY

President, A. B. Goodman, Lenoir	1897	1904
N. C. Med. Coll., 1898.		
Secretary, W. M. White, Lenoir	----	----
Carter, Geo. Hill, King's Creek, R.F.D.	1899	1904
Univ. of N. Y., 1877.		
Coffey, Lawrence H., Lenoir	1906	----
Med. Coll. of Va., 1906.		
Corpening, O. J., Granite Falls	1906	----
Univ. Coll. of Med., Richmond, 1906.		
Hickman, M. I., Hudson	----	----
Kent, Alfred A., Lenoir	1885	1894
Jefferson Med. Coll., Phila., 1885.		
Pitts, W. I., Lenoir	1911	----
Univ. of the South, Sewanee, 1903.		
Russell, C. R., Granite Falls	----	----
Stovie, J. G., Proctor	1898	1908
Tenn. Med. Coll., 1898.		
Sturgis, Margaret, Lenoir	----	----
Sturgis, S. B., Lenoir	----	----
Wilson, Clarence L., Lenoir	1903	1905
U. S. Grant Univ., 1903.		

CAMDEN COUNTY SOCIETY

(See Pasquotank)

CARTERET COUNTY SOCIETY

President,	----	----
Secretary,	----	----
Bonner, Kemp P. B., Morehead City	1905	1905
Med. Coll. of Va., 1905.		
Reed, D. H., Beaufort	----	----
Royal, Ben. F., Morehead City	1909	1909
Jefferson Med. Coll., Phila., 1909.		
Sutton, C. A., Beaufort	----	----

CASWELL COUNTY SOCIETY

President,	----	----
Secretary, S. A. Malloy, Yanceyville	1898	1903
Ky. School Med., 1897.		

CATAWBA COUNTY SOCIETY

(No members in good standing.)

CHATHAM COUNTY SOCIETY

Name and Address	*Licensed*	*Joined State Society*
President, B. H. Hackney, Bynum	1911	1912
Tulane Univ., 1911.		
Secretary, Hiram T. Chapin, Pittsboro	1886	1886
Louis. Med. Coll., 1886.		
Burns, W. M., Goldston	1885	----
P. and S., Bal., 1878.		
Denson, H. A., Goldston	1913	1887
Coll. P. & S., Indianapolis, Ind., 1887.		
Edwards, J. D., Siler City	----	----
Louisville Med. Coll., Louisville, 1887.		
Farthing, L. E., Pittsboro	1906	1906
Univ. of N. C., 1906.		
Harwood, P. C., Apex, R.F.D.	----	----
Laster, P. D., Moncure	1885	1890
Louis. Med. Coll., 1875.		
McManus, W. L., Bonlee	1912	----
Atlanta School of Med., 1906.		
Palmer, R. W., Gulf	----	----
Strickland, W. J., Moncure	1890	----
Univ. of Md., 1890.		

CHEROKEE COUNTY SOCIETY

President, Benj. G. Webb, Andrews	1885	1885
Louisville Med. Coll., 1885.		
Secretary, J. E. Tidwell, Andrews	1914	1915
Chattanooga Med. Coll., 1903.		
Adams, Noah B., Murphy	1909	1909
Tenn. Med. Coll., 1896.		
Herbert, Fred. Lee, Andrews	1912	----
Lincoln Med. Univ., Knoxville, 1904.		
Highway, Sheridan C., Murphy	1898	1898
Med. Coll. of Ohio, 1855.		
Hill, J. N., Murphy	1909	1909
Univ. of Louisville, 1909.		
Morrow, Wm. C., Andrews	1909	1909
Atlanta School of Med., 1907.		
Orr, C. V. Andrews	1909	1909
Univ. of Louisiana, 1909.		
Wilkes, Grover, Andrews	1916	1917
N. C. Med. Coll., Charlotte; Richmond, Va., 1916.		
Young, G. M.	----	----

CHOWAN-PERQUIMANS SOCIETY

(See Perquimans)

CLAY COUNTY SOCIETY

(See Macon-Clay)

CLEVELAND COUNTY SOCIETY

President, J. Y. Hamrick, Jr., Boiling Springs	1915	1917
Coll. P. & S., N. Y., Columbia Univ., 1915.		
Secretary, T. G. Hamrick, Shelby	1895	1904
P. and S., Balt., 1895.		
Aydlette, Jos. P., Earl	1903	1904
Ky. Univ., 1901.		
Champion, C. O., Mooresboro	1902	1904
Atlanta Med. Coll., 1877.		

Name and Address	*Licensed*	*Joined State Society*
Ellis, R. C., Shelby	----	1904
Balt. Univ. School of Med., 1886.		
Gibbs, E. W., Mooresboro	----	----
Lafferty, J. S., Shelby	----	----
Lattimore, E. B., Shelby	1896	1904
Bellevue Med. Coll., 1898.		
Lee, Lawrence V. Lattimore	1897	1904
Atlanta Med. Coll., 1894.		
McBrayer, T. E., Shelby	1885	1904
P. and S., Balt., 1879.		
Mitchell, W. F., Shelby	1900	1904
Univ. of Md., 1890.		
Mull, Wm. P., U. S. N., Training Station Norfolk, Va.	----	----
Oates, Geo. Grover	1894	----
Univ. of Louisville, 1871.		
Palmer, Benj. H., Shelby	1898	1904
Louisville Med. Coll., 1896.		
Royster, S. S., Shelby	1896	1904
Tenn. Med. Coll., 1890.		
Wood, J. W., Shelby, R.F.D. 3	1903	----
Louisville Med. Coll., Louisville, 1892.		

COLUMBUS COUNTY SOCIETY

President,	----	----
Secretary,	----	----
Cox, G. S., Tabor, N. C.	1911	----
N. C. Med. Coll., Charlotte, 1911.		

CRAVEN COUNTY SOCIETY

President,	----	----
Secretary,	----	----
Caton, G. A., New Bern	1898	1904
Med. Coll of Va., 1898.		
Duffie, Richard N., New Bern	1907	1907
Johns Hopkins, 1906.		
Duffy, Francis, New Bern	----	----
Duffy, Leinster, New Bern	1888	1888
P. and S., Balt., 1889.		
Gibbs, N. M., New Bern	1895	----
Univ. of Md. and the Coll. of P. & S., Balt., 1896.		
Jones, R. Duval, New Bern	1897	1897
Univ. of Md., 1896.		
Patterson, Joseph F., New Bern	1906	1906
Jefferson Med. Coll., Phila., 1906.		

CUMBERLAND COUNTY SOCIETY

President,	----	----
Secretary,	----	----
Allgood, R. A., Fayetteville	1915	----
Univ. of Md. and Coll. of P. & S., Balt., 1912.		
Averitt, Kirby G., Cedar Creek	1893	1902
Balt. Med. Coll., 1893.		
Bullock, Thos. C., Autryville	1885	1904
P. and S., Balt., 1885.		
Highsmith, J. F., Fayetteville	1889	1893
Jefferson Med. Coll., Phila., 1889.		
Highsmith, Seavy, Fayetteville	1901	1901
Univ. Coll. of Med., Va., 1901.		

Name and Address	*Licensed*	*Joined State Society*
Jordan, Wm. S., Fayetteville	1906	1906
Univ. of N. C., Med. Dept., 1906.		
Lilly, Jas. M., Fayetteville	1903	1904
Univ. Coll. of Med., Va., 1903.		
McGougan, J. V., Fayetteville	1893	----
Univ. of Md. and Coll. of P. & S., Balt., 1893.		
McKethan, D. G., Fayetteville	1899	1899
Univ. Coll. of Med., Va., 1899.		
McKethan, Jno. Alex., Fayetteville	1901	1901
N. C. Med. Coll., 1901.		
McNeil, J. W. (Hon.), Fayetteville	1876	1876
Bellevue Med. Coll., 1876.		
Olive Perry W., Wade	1907	1908
P. and S., Balt., 1907.		
Pittman, R. L., Fayetteville	1910	1910
Univ. of Md., 1906.		
Powell, R. A., Fayetteville	----	----
Smoot, Morris L., Fayetteville	1903	1904
Univ. Coll. of Med., Va., 1903.		
West, T. M., Fayetteville	1910	1910
Univ. of Md., 1908.		

CURRITUCK COUNTY SOCIETY

Ritter, F. W. (Hon.), Moyock	1885	----

DARE COUNTY SOCIETY

(See Pasquotank)

DAVIDSON COUNTY SOCIETY

President, Walter J. Peacock, Thomasville	1901	----
Tulane Univ. of La., New Orleans, 1901.		
Secretary, Everett F. Long, Lexington	1909	1909
Med. Coll. of Va., 1909.		
Anderson, Abel, Denton	----	----
Bowers, M. A., Thomasville	1911	----
Tulane Univ., 1911.		
Buchanan, E. J., Lexington	1892	1900
Univ. of Md., 1892.		
Cathell, Jas. Edwin, Linwood, R.F. D. 1	1902	1910
Univ. of Md., 1899.		
Clodfelter, Chas. M., Lexington	1905	1905
P. and S., Balt., 1905.		
Hill, David Jos., Lexington	1893	1894
P. and S., Balt., 1893.		
Hill, W. Lee, Lexington, R.F.D. 4	1893	----
Coll. of P. & S., Balt., 1893.		
Hobgood, J. E., Thomasville	1907	----
Jeff. Med. Coll. of Philadelphia, 1907.		
Julian, Chas. A., Thomasville	1891	1893
Louisville Med. Coll., 1888.		
Mock, Frank Lowe, Lexington	1908	----
N. C. Med. Coll., Charlotte, 1908.		
Phillips, C. C., Wallburg	1912	----
N. C. Med. Coll., Charlotte, 1912.		
Sharpe, C. R., Lexington	1914	----
Jeff. Med. Coll. of Phila., 1914.		
Smith, J. A., Lexington	1915	----
N. C. Med. Coll., Charlotte, 1915.		

Name and Address	*Licensed*	*Joined State Society*
Terry, J. R., Lexington Univ. of Louisville, Louisville ,1911.	1912	----
Vestal, Willis J., Lexington P. and S., Balt., 1883.	1885	1893
Yokeley, Raymond V., Lexington, R.F.D. 1 N. C. Med. Coll., 1911.	1911	----
York, Alex. Arthur, Linwood, R.F.D. 2 Chattanooga Med. Coll., 1907.	1907	----
Zimmermann, Robt., N., Lexington, R.F.D. 4 N. C. Med. Coll., Charlotte, 1901.	1901	----

DAVIE COUNTY SOCIETY

President.	----	----
Secretary.	----	----
Byerly, Andrew B., Cooleemee U. C. of M., Va., 1896.	1896	1904
Martin, Wilson C., Mocksville P. and S., Balt., 1888.	1888	1904
Nicholson, C. R., Harmony N. C. Med. Coll., 1912.	1912	----
Rodwell, John W., Mocksville P. and S., Balt., 1895.	1895	1896

DUPLIN COUNTY SOCIETY

President.	----	----
Secretary.	----	----
Carr, Ransom Lee, Rose Hill Balt. Med. Coll., 1907.	1908	----
Carroll, John W., Wallace Univ. of Md., 1903.	1903	1903
Crocker, Wm. D., Warsaw Louisville Med. Coll., 1897.	1896	1896
Kennedy, Geo. W., Beulaville	----	----
Landen, Jefferson F., Chinquapin U. C. of Med., Va., 1905.	1905	----
Maxwell, J. F., Pine Hill	----	----
Quinn, Robt. F., Magnolia N. C. Med. Coll., 1912.	1913	----
Williams, Jas. Marcus, Warsaw Univ. of Md., 1902.	1902	1902
Williams, R. C., Wallace Univ. of Md., 1912.	1915	----

DURHAM-ORANGE COUNTY SOCIETY

President.	----	----
Secretary.	----	----
Adams, Claude A., Durham Coll. of P. and S., Balt., 1892.	1892	1892
Adkins, M. T., Durham Johns Hopkins, 1907.	1915	----
Bitting, Numa Duncan, Durham Jefferson Med. Coll., Phila., 1907.	1907	1908
Boddie, Needham P. (Hon.), Durham P. and S., Balt., 1883.	1883	1883
Booker, Lyle S., Durham Univ. Coll. of Med., Va., 1908.	1910	1910
Boone, W. H., Durham N. C. Med. Coll., 1902.	1902	1902

Name and Address	*Licensed*	*Joined State Society*
Bowling, Edwin Holt, Durham P. and S., Balt., 1891.	1890	1906
Boyles, Augustus C., Durham Univ. of Md., 1887.	1887	1887
Bullitt, J. B., Chapel Hill Univ. of Va., 1897.	1914	1914
Cheatham, Archibald, Durham Univ. of Md., 1888.	1888	1888
Fassett, Burton W., Durham Balt. Med. Coll., 1898.	1899	1903
Felts, Robt. L., Durham Univ. of Md., 1898.	1901	1901
Graham, Joseph, Durham Univ. of Pa., 1901.	1901	1901
Hicks, Calvin S., Durham Univ. of Md., 1904.	1904	1904
Hicks, W. N. (Hon.), Durham Med. Coll. of Va., 1864.	1885	1885
Hill, Christopher D., Durham Univ. of Va., 1888.	1912	1912
Holloway, Oscar Woods, North Side Med. Coll. of Va., Richmond, 1901.	1901	----
Holloway, Robt. Lee, West Durham Med. Coll. of Va., 1893.	1893	1893
Johnson, Norman M. (Hon.), Durham P. and S., Balt., 1877.	1879	1879
Jordan, Archibald C., East Durham P. and S., Balt., 1881.	1885	1904
Kerns, Thos. C., Durham Univ. of Pa., 1911.	1911	1912
King, Marion N., Durham Univ. of Md., 1898.	1910	1910
Lloyd, B. B., Venable Univ. of N. C., 1909.	1909	1914
MacNider, Wm. De Berniere, Chapel Hill Univ. of N. C., 1902.	1902	1902
McPherson, S. Dace, Durham Univ. of Md., 1903.	1903	1903
Manning, I. H., Chapel Hill Long Island College Hospital, Brooklyn, 1897.	1899	1899
Manning, John Moore, Durham Bellevue Med. Coll., 1897.	1897	1897
Nichlos, Rhodes E., Durham Va. Med. Coll., Richmond, Va.	1890	1904
Olive, Wm. Wade, Durham Univ. of Md., 1906.	1907	1908
Roberson, Foy, Durham Jeff. Med. Coll., 1909.	1909	1912
Robertson, Mike, Durham Med. Coll. of Va., Richmond, 1912.	1912	----
Ross, Geo. H., Durham Univ. of Tenn., 1899.	1899	1899
Sterrett, J. R., West Durham Univ. Coll. of Med., Va., 1908.	1913	----
Sweaney, John, West Durham P. and S., Balt., 1886.	1888	----
Watkins, G. T., West Durham Jefferson Med. Coll., Phila., 1915.	1915	1916

EDGECOMBE COUNTY SOCIETY

Name and Address	*Licensed*	*Joined State Society*
President, W. J. Thigpen	1900	1900
Jefferson Med. Coll., Phila., 1900.		
Secretary, K. E. Miller, Tarboro	----	----
Baker, J. M. (Hon.), Tarboro	1879	1879
Univ. of Md., 1879.		
Barber, Y. M.	----	----
Bass, Spencer, P., Tarboro	1907	1908
Univ. of Va., 1906.		
Green, W. W., Tarboro	1908	1909
Univ. of N. C., 1908.		
Harrell, S. N., Tarboro	1897	1897
Univ. of Md., 1897.		
Raby, J. G., Tarboro	1911	1911
Univ. Coll. of Med., Va., 1911.		
Staton, L. L. (Hon.), Tarboro	1870	1900
Univ. of N. Y., 1870.		
Wooten, A. M., Pinetops	1910	1910
Univ. of N. C., 1910.		

FORSYTH COUNTY SOCIETY

President,	----	----
Secretary, W. L. Grimes, Winston-Salem	1910	1915
Johns Hopkins Med. School, 1910.		
Belton, J. F., Winston-Salem	1914	1915
Univ. of Penna., 1914.		
Bulla, A. C., Winston-Salem	----	----
Bynum, John, Winston-Salem	1892	1900
Univ. of N. Y., 1892.		
Carlton, Romulus L., Kernersville	1906	1906
Univ. of Md., 1906.		
Dalton, David N., Winston-Salem	1885	1886
Univ. of N. Y., 1881.		
Dalton, Wm. Nicholson, Winston-Salem	1904	1915
N. C. Med. Coll., Charlotte, 1904.		
Davis, Thos. W., Winston-Salem	1900	1901
Med. Coll. of S. C., 1898.		
Dowdy, J. Ernest, Winston-Salem	1909	1909
Univ. of Md., 1909.		
Edwards, Albert D., Winston-Salem	1904	1904
Univ. of Md., 1903.		
Fearington, J. Peyton, Winston-Salem	1887	1904
Univ. of Md., 1887.		
Flynt, S. S., Rural Hall	1890	1906
P. and S., Baltimore, 1889.		
Gray, Eugene Price, Winston-Salem	1907	1907
Johns Hopkins Med. School, 1906.		
Hammock, J. C., Walkertown	1895	1905
P. and S., Balt., 1895.		
Hege, J. Ray, Clemmons	1916	1917
Univ. of N. C.; Univ. of Md., 1916.		
Izlar, H. L., Winston-Salem	1916	1916
Med. Coll. of the State of N. C., 1915.		
Jewett, R. D., Winston-Salem	1890	1890
Univ. of Va., 1888.		
Johnson, W. M., Winston-Salem	1908	1910
Jeff. Med. Coll., Phila., 1908.		
Kapp, Henry Herman, Winston-Salem	1901	1904
Jeff. Med. Coll., Phila., 1901.		

Name and Address	*Licensed*	*Joined State Society*
Keiger, A. R., Winston-Salem	1911	1914
Univ. Coll. of Med., Richmond, Va., 1911.		
Linville, Aaron Y., Winston-Salem	1889	1889
Univ. of N. Y., 1889.		
Long, Van McKee, Winston-Salem	1906	1906
N. C. Med. Coll., 1906.		
Lott, Henry S., Winston-Salem	1887	1887
Univ. of Georgia, 1884.		
Mimms, C. W., Winston-Salem	1916	1916
Vanderbilt Univ., Univ. of Louisville, Ky., 1914.		
Pepper, John Kerr, Winston-Salem	1908	1908
P. and S., Baltimore.		
Perkins, J. R., Winston-Salem	1904	1917
Med. Coll. of Va., 1904.		
Pfohl, S. F., Winston-Salem	1898	1898
Univ. of Pa., 1894.		
Schallert, P. O., Winston-Salem	1904	1904
Univ. of Ill., Med. Dept., 1904.		
Schaub, O. P., Winston-Salem	1898	1898
Balt. Med. Coll., 1898.		
Shaffner, T. F. (Hon.), Winston-Salem	----	----
Spainhour, Ellis H., Winston-Salem	1898	1898
Baltimore Med. Coll., 1898.		
Spencer, Wm. Oliver, Winston-Salem	1891	1894
Jeff. Med. Coll., Phila., 1891.		
Summers, Chas. L., Winston-Salem	1892	----
Univ. of Md. and the Coll. of P. & S., Balt., 1887.		
Valk, A. D. T., Winston-Salem	1913	1913
Johns Hopkins Med. School, 1910.		
Wall, R. L., Winston-Salem	1907	1907
Jeff. Med. Coll., Phila., 1906.		
Whittington, Jas. B., Winston-Salem	1911	1911
N. C. Med. Coll., 1911.		
Wiggins, John C., Winston-Salem	1910	----
Univ. of Pa., School of Med., Philadelphia, 1910.		

FRANKLIN COUNTY SOCIETY

President, Richard F. Yarborough, Louisburg	1899	1899
Columbia Univ. D. C., 1898.		
Secretary, Samuel P. Burt, Louisburg	1896	1904
P. and S., Balt., 1896.		
Harris, John H., Franklinton	1886	1904
Bellevue Med. Coll., 1886.		
Henderson, Richard B., Franklinton	1887	1904
Univ. of Md., 1887.		
Johnson, B. C., Louisburg, R.F.D. 1	1910	1910
Univ. of N. C., 1909.		
Malone, Jas. E., Louisburg	1885	1904
Bellevue Med. Coll., 1875.		
Newell, Hodge A., Louisburg	1906	1906
P. and S., Balt., 1906.		
Newell, J. O., Louisburg	1910	1910
P. and S., Balt., 1910.		
Perry, Ernest M., Louisburg	1899	1899
Columbia Univ. of D. C., 1898.		
Perry, H. G., Woods	1915	----
Coll. of P. and S., Balt., 1915.		
Timberlake, Richard E., Youngsville	----	----

GASTON COUNTY

Name and Address	*Licensed*	*Joined State Society*
President, Bessie V. Puett, Dallas	1909	1910
Woman's Med. Coll., Balt., 1909.		
Secretary, Chas. Harrison Pugh, Gastonia	1910	----
N. C. Med. Coll., Charlotte, 1910.		
Adams, C. E., Gastonia	1885	1904
Univ. of Md., 1878.		
Anders, McT. G., Gastonia	1902	1902
Med. Coll. of Va., 1901.		
Anderson, J. A., McAdenville	1909	1909
Univ. of Ga., 1899.		
Caldwell, J. M., Gastonia	1885	1916
S. C. Med. Coll., 1885.		
Davis, Wm. W., Belmont	1885	----
Kentucky School of Med., Louisville, 1875.		
Eddleman, Hall M., Gastonia	1886	1904
Ky. School of Med., 1886.		
Garrett, Robt. H., Bessemer City	1901	1904
Univ. of Nashville, 1900.		
Garrison, David A., Gastonia	1896	1899
Louisville Med. Coll., 1896.		
Glenn, Henry F., Gastonia	1900	1904
P. and S., Atlanta, 1900.		
Glenn, Lucius N., Gastonia	1897	1897
Univ. of Md., 1897.		
Jenkins, John H., Gastonia	1888	----
Ky. School of Medicine, Louisville, 1887.		
Johnson, Lee, Gastonia	----	----
McAdams, C. R., McAdenville	1912	----
N. C. Med. Coll., 1912.		
McCombs, Cyrus J., Gastonia	1905	1908
N. C. Med. Coll., 1905.		
McCombs, Cyrus J., Gastonia	1905	1908
N. C. Med. Coll., 1905.		
McCoy, Thos. M., Mount Holly	1906	1907
N. C. Med. Coll., 1905.		
Patrick, L. N., Gastonia	1910	1913
Univ. of Md., 1910.		
Quickel, Thos. C., Gastonia	1899	1904
Tulane Univ., 1900.		
Reid, Jas. M., Lowell	1909	1909
Jefferson Med. Coll., Phila., 1909.		
Rhyne, Robt. Edgar O., Mount Holly	1907	1908
N. C. Med. Coll., 1907.		
Robinson, Frank, Lowell	1878	1904
Louisville Med. Coll., 1878.		
Rowe, Robt. H., Bessemer City	1912	1915
Univ. of Louisville, 1912.		
Sloan, Jas. M., Gastonia	1891	1904
Louisville Med. Coll., 1891.		
Wilkins, S. A., Dallas	1903	1903
Univ. of Ky., 1902.		
Wilson, Frank G., Gastonia	1896	1899
Univ. of Md., 1896.		

GATES COUNTY SOCIETY

(No members in good standing)

GRAHAM COUNTY SOCIETY

(No members in good standing)

GRANVILLE COUNTY SOCIETY

Name and Address	*Licensed*	*Joined State Society*
President,	----	----
Secretary,	----	----
Booth, J. L., Oxford Med. Coll. of S. C., 1883.	1885	----
Booth, S. D. (Hon.), Oxford	----	----
Bullock, Wm. B., Hester Bellevue Med. Coll., 1892.	1892	----
Cannady, Sam. H., Oxford Univ. of Va., 1887.	1889	----
Carroll, John L., Hookerton	----	----
Daniel, N. C., Oxford N. C. Med. Coll., 1895.	1895	----
Hardee, Parrott R., Stem P. and S., Balt., 1885.	1885	1885
Hays, Benj. K., Oxford Univ. Coll. of Med., Va., 1894.	1894	1896
Meadows, Elijah, B., Oxford, R.F.D. 3 Univ. Coll. of Med., Va., 1901.	1901	1901
Morris, Jos. A., Oxford, R.F.D. 2 Vanderbilt Univ., 1890.	1893	1893
Sikes, G. T. (Hon.), Grissom Univ. of Md., 1883.	1884	1884
Thomas, Wm. N., Oxford Med. Coll. of Va., 1911.	1911	----
Thompson, Jos., Creedmoor Kentucky Univ., Louisville, 1904.	1908	----
Watkins, Geo. S., Oxford Univ. Coll. of Med., Va., 1900.	1900	----

GREENE COUNTY SOCIETY

President,	----	----
Secretary,	----	----
Carroll, John L., Hookerton Louisville Med. Coll., 1905.	1905	----
Edwards, G. C. (Hon.), Hookerton Bellevue Med. Coll., 1883.	1883	1883

GUILFORD COUNTY SOCIETY

President, May S. Miles, Greensboro Laura Memorial Woman's Med. Coll., Cinn., O., 1898.	1904	1905
Secretary, R. A. Schoonover, Greensboro Univ. of Md., 1905.	1906	1912
Ashworth, Walter C., Greensboro P. and S., Balt., 1892.	1892	1892
Austin, J. W., High Point Jefferson Med. Coll., Phila., 1910.	1910	1913
Banner, Chas. W., Greensboro Univ. of Md., 1899.	1899	1901
Battle, J. T. J., Greensboro P. and S., Balt., 1884.	1884	1889
Beall, W. P. (Hon.), Greensboro Jefferson Med. Coll., 1879.	1879	1879
Bowman, Harlan P., Greensboro Univ. of Tenn., 1894.	1894	----
Boyles, J. H., Greensboro P. and S., Balt., 1903.	1903	1903
Braddy, W. H., Greensboro Univ. of N. C., 1909.	1909	1913

Name and Address	*Licensed*	*Joined State Society*
Burrus, John T., High Point	1898	1898
Balt. Med. Coll., 1901.		
Coe, Samuel S., High Point	1912	1912
Univ. Coll. of Med., Va., 1911.		
Cole, Walter F., Greensboro	1909	1909
Johns Hopkins, 1909.		
Dees, R. E., Greensboro	1908	1908
Univ. of Md., 1906.		
Dees, Rigdon O., Greensboro	1906	1907
Univ. of Md., 1906.		
Dick, Julius V., Gibsonville	1907	1908
Univ. of N. C., 1907.		
Fortune, Alex. F., Greensboro	1900	1904
Univ. Coll. of Med., Va., 1900.		
Fox, M. F., Guilford College	----	----
Gilmer, Chas. S., Greensboro, R.F.D. 6	1891	1894
Univ. of N. Y., 1891.		
Gordon, Jas. R., Jamestown	1891	----
Univ. of N. Y., 1891.		
Gove, Anna M., Greensboro	1894	1894
Woman's Med. Coll., N. Y., 1892.		
Grayson, C. S., High Point	1907	1908
George Washington Univ., 1906.		
Harrison, Edmund ,Greensboro	1900	1900
Univ. of Md., 1896		
Hiatt, H. B., High Point	1907	----
Univ. of Md., 1907.		
Hilton, Julius J., Greensboro	1889	1904
Univ. of Md., 1886.		
Hockett, L. E., Summerfield	----	----
Holt, Wm. T., McLeansville	1890	1890
Univ. of Tenn., 1890.		
Hyatt, Fred. C., Greensboro	1907	1907
Jefferson Med. Coll., Phila., 1907.		
Jackson, Walter L., High Point	1912	1913
N. C. Med. Coll., 1912.		
Jarboe, Parran, Greensboro	1906	1906
Georgetown Univ., 1905.		
Jones, Wm. M., Jr., Greensboro	1903	1903
Univ. of Md., 1903.		
Knight, Wm. P., Greensboro	1898	1898
Balt. Med. Coll., 1898.		
Long, J. W. (Hon.), Greensboro	1884	1884
Vanderbilt Univ., 1884.		
McAnally, Wm. J., High Point	1896	1899
Balt. Med. Coll., 1897.		
McCain, Hugh W., High Point	1909	1911
Univ. of Md., 1909.		
Mann, I. T., High Point	1912	----
Jeff. M. C., of Phila., 1912.		
Meadows, W. J., Greensboro	1889	1904
Med. Coll. of Ala., 1894.		
Michaux, E. R., Greensboro	1889	1904
Univ. of N. Y., 1889.		
Moore, Charles E., Greensboro	1909	----
Jefferson Med. Coll., Phila., 1907.		
Moseley, Chas. W., Greensboro	1893	1896
Balt. Med. Coll., 1893.		
Norman, Geo. W., Pomona	1896	1896
Balt. Med. Coll., 1896.		

Name and Address	*Licensed*	*Joined State Society*
Ogburn, H. H., Greensboro	1913	----
Johns Hopkins Univ., 1913.		
Oliver, A. S., Greensboro	----	----
Pate, F. J., Greensboro	1908	----
Univ. of Md., and the Coll. of P. & S., Balt., 1908.		
Penfield, Perle P., Greensboro	----	----
Reaves, Chas. R., Greensboro	1914	1914
Univ. of the South, 1906.		
Reaves, Wm. P., Greensboro	1905	----
Univ. of the South, 1903.		
Reitzel, Claude E., High Point	1902	1902
P. and S., Atlanta, 1902.		
Richardson, Wm. J., Greensboro	1889	1901
Jefferson Med. Coll., Phila., 1869.		
Rieves, J. T., Greensboro	1891	1892
Louisville Med. Coll., 1891.		
Roberson, Charles, Greensboro	1897	----
Long Island College Hospital, 1897.		
Smith, Alick T., Greensboro	1910	1913
Med. Coll. of Va., 1908.		
Smith, Owen H., High Point	1905	1905
Jeff. Med. Coll., Phila., Pa., 1904.		
Spoon, Arthur O., Greensboro	1908	----
N. C. Med. Coll., 1908.		
Stanton, David A., High Point	1887	1894
Vanderbilt Univ., 1887.		
Stanton, T. M., High Point	----	----
Starr, H. F., Greensboro	1916	1916
Jeff. Med. Coll., 1916.		
Taylor, F. Raymond, High Point	1913	----
Univ. of Pa., 1913.		
Turner, J. P., Greensboro	1897	1904
Univ. of Md., 1896.		
Tyson, T. D., Pleasant Garden	1899	----
Univ. Coll. of Med., Va., 1899.		
Walker, J. B., Gibsonville	1914	----
Med. Coll. of Va., 1914.		
Whitaker, Asa C., Julian	1903	----
Univ. of Tenn., 1903.		
Williams, B. B., Greensboro	1886	----
Univ. of Md., 1886.		
Williams, John A., Greensboro	1898	1898
Univ. of Va., 1898.		
Williams, John D., Guilford	1898	----
Vanderbilt Univ., 1898.		
Wilson, A. R. (Hon.), Greensboro	1882	----
Jefferson Med. Coll., Phila., 1882.		
Wilson, Newton G., Summerfield	1914	----
N. C. Med. Coll., 1914.		

HALIFAX COUNTY SOCIETY

President,	----	----
Secretary,	----	----
Kitchin, T. D., Scotland Neck	1908	----
Jeff. Med. Coll. of Phila., 1908.		

HARNETT COUNTY SOCIETY

President,	----	----
Secretary,	----	----

Name and Address	*Licensed*	*Joined State Society*
Arnold, Laurie J., Lillington	1905	1905
N. C. Med. Coll., 1905.		
Barefoot, M. L., Dunn, R.F.D.	1911	1912
Univ. of Md., 1911.		
Coltrane, Wallace Early, Dunn	1913	----
Med. Coll. of Va., Richmond, 1912.		
Halford, Jos. W. Lillington	1905	1905
Columbia Univ., 1904.		
Hicks, Isham F., Dunn	1902	1904
N. C. Med. Coll., 1902.		
Highsmith, Charles, Dunn	1898	1898
Balt., Med. Coll., 1898.		
Holt, Wm. P., Duke	1895	1901
Jefferson Med. Coll., Phila., 1895.		
Lee, Saunders P. J., Dunn, R.F.D. 2	1904	----
Md. Med. Coll., Balt., 1904.		
McKay, Jos. F., Buie's Creek	1885	1904
S. C. Med. Coll., 1884.		
McLean, John W. Godwin	1902	1902
N. C. Med. Coll., 1902.		
Melvin, W. C., Linden	1900	1905
Univ. Coll. of Med., Va., 1900.		
Roberts, H. C., Coats	1912	1913
Tulane Univ., 1912.		
Ruff, F. R.	1915	----
Univ. Coll. of Med., Va., 1913.		
Sexton, C. H. Dunn	1890	1904
Univ. of Md., 1890.		
Warren, Robt. Lee, Dunn	1911	1912
Tulane University, 1911.		

HAYWOOD COUNTY SOCIETY

President,	----	----
Secretary,	----	----
Abel, J. F., Waynesville	1893	1899
Univ. of Balt., 1892.		
Allen, Rufus L., Waynesville	1885	1899
Univ. of Md., 1885.		
Johnson, W. C., Canton	1912	----
Tulane Univ. of La., New Orleans, 1912.		
McCracken, John R., Waynesville	1902	----
N. C. Med. Coll., Charlotte, 1902.		
Russell, F. F., Canton	----	----
Russell, Jessie M., Canton	1911	1911
Univ. of Nashville, 1911.		
Stringfield, Samuel L., Sunburst	1905	1906
Jefferson Med. Coll., Phila., 1905.		
Way, J. Howell (Hon.), Waynesville	1885	1887
Vanderbilt Univ., 1886.		
Wilson, Jos. Edwin, Canton, R.F.D.	1885	1903
Louisville Med. Coll., 1876.		

HENDERSON-POLK COUNTY SOCIETY

President,	----	----
Secretary, Eugene Pierre Mallett, Hendersonville	1913	1913
Long Island Med. Coll., 1889.		
Brown, Jas. S., Hendersonville	1894	1894
Northwestern Univ., 1893.		
Dixon, Guy E., Hendersonville	1903	1903
P. and S., St. Louis, 1903.		

Name and Address	*Licensed*	*Joined State Society*
Drafts, Andrew B., Hendersonville	1899	1903
Univ. of Va., 1896.		
Edgerton, Jas. L., Hendersonville	----	1890
Univ. of Md., 1877.		
Grady, Wm. Earle, Tryon	----	1895
Univ. of Md. and the Coll. of P. & S., Balt., 1894.		
Greenwood, Solomon E., Fletcher	1903	1904
Tenn. Med. Coll., 1902.		
Howe, Wm. Bell White, Jr., Hendersonville	1907	1908
Med. Coll. of S. C., 1906.		
Kirk, W. R., Hendersonville	1901	1903
Central Univ. of Ky., 1890.		
Salley, E. McQueen, Saluda	1905	1906
Univ. of Md., 1905.		
Sumner, Thos. W., Fletcher	1910	1910
Jefferson Med. Coll., Phila., 1910.		

HERTFORD COUNTY SOCIETY

President, Roderick H. Gary, Murfreesboro	----	----
Secretary, Walter Byrd Pollard, Winton	1903	----
Univ. of Pa., Phila., 1899.		
Burbage, Thos. I., Como	1885	----
Memphis Hosp., Med. Coll., Memphis, 1883.		
Futrell, L. M., Murfreesboro	----	----
Greene, Arthur W., Ahoskie	1904	1905
Univ. Coll. of Med., Va., 1904.		
Harrell, Geo. N., Murfreesboro	----	1907
Univ. Coll. of Med., Richmond, 1907.		
Mitchell, J. H., Ahoskie	1885	----
Coll. of P. and S., Balt., 1879.		
Mitchell, Paul Henry, Ahoskie	----	----
Powell, Jessie A., Harrellsville	----	----
Walker, L. K., Ahoskie	----	----

HOKE COUNTY SOCIETY

President, Geo. A. Graham, Raeford	----	1905
Univ. of N. Y., 1876.		
Secretary, L. B. McBrayer, Sanatorium	1891	----
Univ. of Md. and the Coll. of P. & S., Balt., 1911.		
Brown, Geo. W., Raeford	----	1900
Ky. School of Med., Louisville, 1898.		
Dickson, A. P., Raeford	----	1906
Univ. of N. Y., 1878.		
Juat, Francis, Raeford	1910	1910
Univ. of Berne, 1886.		
McBrayer, Reuben, Sanatorium	----	----
McCain, P. P., Sanatorium	1914	----
Univ. of Md. and the Coll. of P. & S., Balt., 1911.		
Rosser, R. G., Rockfish	1909	1911
N. C. Med. Coll., Charlotte, 1909.		
Sherrill, W. H., Sanatorium	----	----
Thompson, S. W., Sanatorium	1915	----
Med. Coll. of Va., Richmond, 1913.		
Wilkins, R. B., Raeford	1913	1913
N. C. Med. Coll., 1913.		

HYDE COUNTY SOCIETY

President,	----	----
Secretary,	----	----
Harris, Arthur G., Fairfield	----	----

IREDELL ALEXANDER COUNTY SOCIETY

Name and Address	*Licensed*	*Joined State Society*
President, P. S. Easeley, Statesville	1907	----
N. C. Med. Coll., Charlotte, 1907; Jeff. Med. Coll., Phila., 1908.		
Secretary, John Eugene McLaughlin, Statesville	1886	1896
Univ. of Md., 1886.		
Adam, M. R. (Hon.), Statesville	1884	1884
Univ. of Md., 1878.		
Anderson, T. E. (Hon.), Statesville	1878	1878
Jefferson Med. Coll., Phila., 1878.		
Bell, Andrew E., Mooresville	1897	----
Univ. of Md. and the Coll. of P. & S., 1897.		
Carpenter, F. A., Mooresville	1906	1906
N. C. Med. Coll., 1906.		
Gilmore, Willis Dowd, Mooresville	1903	----
Univ. of N. C., School of Med., Chapel Hill, 1903.		
Little, E. E., Statesville, R.F.D. 6	1912	----
N. C. Med. College, Charlotte, 1912.		
Long, Henry F., Statesville	1892	1903
Univ. of Md., 1892.		
McElwee, Ross S., Statesville	----	----
Tally, J. S. Troutman	1910	1917
Univ. of N. C., 1909.		

JACKSON COUNTY SOCIETY

President,	----	----
Secretary,	----	----
Nichols, Alvon A., Sylva	1904	----
Univ. of Nashville, Med. Dept., 1898.		
Nichols, Asbury S., Sylva	1907	----
Lincoln Mem. Univ. Med. Dept., Knoxville, 1905.		

JOHNSTON COUNTY SOCIETY

President, Thos. A. Griffin, Clayton	1912	1912
Univ. of Md., 1912.		
Secretary, B. A. Hocutt, Clayton	1906	----
Univ. of N. C., S. of Med., Chapel Hill, 1906.		
Eason, Oscar, Princeton	1910	1910
Univ. of N. C., 1910.		
Grady, Jas. C. Kenly	1887	1905
P. and S., Balt., 1887.		
McLemore, G. A., Clayton	1906	1907
Univ. of N. C., 1900.		
Martin, J. F., Benson	----	----
Mayerberg, I. W., Selma	1907	1908
Jefferson Med. Coll., Phila., 1907.		
Noble, R. J. (Hon.), Selma	1878	1879
Ky. Med. School, 1875.		
Parker, Geo. E. Benson	1885	----
Coll. of P. & S., Balt., 1886.		
Person, Jas. B., Jr., Selma	1897	1900
Med. Coll. of Va., 1897.		
Rose, A. H., Smithfield	1906	1906
Jefferson Med. Coll., Phila., 1906.		
Utley, H. H., Benson	1906	1906
Balt. Med. Coll., 1906.		
Vick, George D., Selma	1906	1906
Jefferson Med. Coll., Phila., 1906.		

Name and Address	*Licensed*	*Joined State Society*
Wharton, L. D., Smithfield Tulane Univ., 1893.	1893	1894
Woodard, Albert G., Princeton Univ. of N. C., 1907.	1907	1907
Young, J. J., Clayton P. and S., Balt., 1897.	1896	1904

JONES COUNTY SOCIETY

(No members in good standing.)

LEE COUNTY SOCIETY

President, M. L. Matthews, Sanford	----	----
Secretary, Lynn McIver, Sanford Univ. of Ky., 1901.	1902	1902
Monroe, J. P., Sanford P. and S., Balt., 1901.	1901	1901
Monroe, W. A., Sanford Univ. of Md., 1886.	1886	1888
Snipes, E. P., Jonesboro Vanderbilt Univ., 1890.	1892	1892
Watson, Leon, Broadway N. C. Med. Coll., 1900.	1900	1904

LENOIR COUNTY SOCIETY

President, Ira Hardy, Kinston Med. Coll. of Va., 1901.	1902	1902
Secretary, G. E. Kornegay, Kinston Tulane Univ. of La., 1907.	1913	----
Denny, W. L. (Hon.), Pink Hill	----	----
Hargrove, W. F. Kinston Univ. of Md., 1901.	1901	1901
McNairy, C. B., Kinston P. and S., Balt., 1893.	1893	1907
Mitchener, J. S. Kinston	----	----
Monk, Henry, Trenton Med. Coll. of Va., 1896.	1896	1904
Moseley, Z. V., Kinston Univ. Coll. of Med., Va., 1913.	1913	----
Parrott, A. D., Kinston Univ. Coll. of Med., Va., 1906.	1906	1906
Parrott, J. M., Kinston Tulane Univ., 1895.	1895	1895
Parrott, W. T., Kinston Tulane Univ., 1895.	1895	1895
Tull, Henry (Hon.), Kinston Univ. of Pa., 1876.	1876	1876
Whitaker, F. A., Kinston Univ. of Pa., 1875.	1871	1884
Whitaker, F. S., Kinston Balt. Med. Coll., 1913.	1913	1913
Whitaker, R. A. (Hon.), Kinston P. and S., Balt., 1885.	1885	1885

LINCOLN COUNTY SOCIETY

President,	----	----
Secretary,	----	----
Abernethy, Horace N., Denver Louisville Med. Coll., 1894.	1894	1898

Name and Address	*Licensed*	*Joined State Society*
Crowell, Lester A., Lincolnton	1892	1892
Balt. Med. Coll., 1892.		
Elliott, W. F., Lincolnton	----	----
Gamble, John R., High Shoals	----	----
Univ. Nashville, Tenn., 1911.		
Hoover, C. H., Lincolnton, R.F.D.	1903	1904
Balt. Med. Coll., 1903.		
Killian, Robt. E., Lincolnton	1885	1904
Louisville Med. Coll., 1885.		
Kizer, W. C., Reepsville	1889	1904
Southern Med. Coll., Ga., 1889.		
Lee, R. E., Lincolnton	----	----
Saine, J. W., Lincolnton	1891	1904
Louis. Med. Coll., 1891.		
Thompson, Claude D., Lincolnton	1901	1904
Univ. of Tenn., 1901.		
Wise, J. S., Lincolnton	----	----

McDOWELL COUNTY SOCIETY

President, Donald M. McIntosh, Old Fort	1907	1908
Med. Coll. of Va., 1904.		
Secretary, Guy S. Kirby, Marion	1896	1904
Univ. Coll. of Med., Va., 1897.		
Ashworth, Benj. L., Marion	1893	1895
P. and S., Balt., 1893.		
Johnson, John B., Old Fort, R.F.D. 1	1914	----
Univ. of Louisville, Med. Dept., 1905.		
Jonas, John F., Marion	1903	1903
Balt. Med. Coll., 1903.		
Justice, G. B., Marion	1907	1907
P. and S., Atlanta, 1906.		
Morphew, Frank M., Marion	1883	1893
P. and S., Balt., 1883.		

MACON-CLAY COUNTY SOCIETY

President, Fred. L. Siler, Franklin	1898	1898
Univ. of Nashville, 1897.		
Secretary, Wiley A. Rogers, Franklin	1898	1898
Univ. of Nashville, 1898.		
Fonts, J. H., Franklin	----	----
Horsely, H. T., Franklin	----	----
Lyle, Samuel Harley, Franklin	1881	1881
Univ. of Nashville, 1883.		
Perry, M. P. (Hon.), Macon	----	----

MADISON COUNTY SOCIETY

(No members in good standing.)

MARTIN COUNTY SOCIETY

President,	----	----
Secretary,	----	----
Hargrove, R. H. (Hon.), Robersonville	1879	1879
Univ. of Md., 1877.		
Knight, Josiah B. H., Williamston	1885	1891
P. and S., Balt., 1885.		
Long, Edgar Miller, Oak City	1909	1909
Univ. of Md., 1909.		
Nelson, Robt. J., Robersonville	1890	1893
Louisville Med. Coll., 1890.		

Name and Address	*Licensed*	*Joined State Society*
Rhodes, Jas. Slade, Williamston	1906	1906
Med. Coll. of Va., 1906.		
Saunders, J. H., Williamston	1905	1905
Univ. Coll. of Med., Va., 1905.		
Smithwick, J. E., Jamesville	1897	1897
Med. Coll. of Va., 1897.		
Ward, Jesse E., Robersonville	1904	1904
Univ. of Md., 1904.		
Ward, Vernon Albert, Robersonville	1908	1908
Jefferson Med. Coll., Phila., 1908.		
Warren, Wm. E., Williamston	1893	1894
Nongrad Univ., N. Y.		
Williams, John W., Everetts	1906	1906
Univ. of Md., 1906.		
York, Hugh B., Williamston	1906	1906
P. and S., Balt., 1906.		

MECKLENBURG COUNTY SOCIETY

President, S. C. McLaughlin, Charlotte	1896	1903
Univ. of Md., 1896.		
Secretary, Otho B. Ross, Charlotte	1909	1911
Univ. of Pa., 1909.		
Alexander, Jas. R., Charlotte	1894	1898
Univ. of Md., 1894.		
Adhe, J. R., Charlotte	1915	1915
Columbia Univ., 1911.		
Austin, Frederic de Costa	1907	1907
N. C. Med. Coll., 1907.		
Austin, Jas. A., Charlotte	1882	1887
Jefferson Med. Coll., Phila., 1882.		
Boyette, E. C., Charlotte	1898	1898
Balt. Med. Coll., 1893.		
Clifford, John S., Charlotte	1907	1908
George Washington Univ., 1906.		
Craven, Wm. W., Huntersville	1904	1912
Univ. of Md., 1903.		
Crowell, Andrew J., Charlotte	1892	1893
Univ. of Md., 1893.		
Davidson, John E. S., Charlotte	1898	1898
Univ. of Md., 1894.		
DeArman, J. Mc., Charlotte	----	----
Faison, I. A. (Hon.), Charlotte	1878	1878
Bellevue Med. Coll., 1878.		
Gibbon, R. L., Charlotte	1891	1893
Jefferson Med. Coll., Phila., 1892.		
Graham, Wm. A., Charlotte	1889	1890
P. and S., N. Y., 1888.		
Hand, Edgar H., Pineville	1907	----
N. C. Med. Coll., Charlotte, 1907.		
Hauser, O. J., Charlotte	1914	----
N. C. Med. Coll., 1914.		
Henderson, S. McD., Charlotte, R.F.D.	1894	1904
Univ. of Md., 1894.		
Herron, Alex. M., Charlotte	1884	----
Med. Coll. of the State of S. C., 1882.		
Hunter, L. W. (Hon.), Sardis	----	----
Irwin, J. R. (Hon.), Charlotte	1882	1882
Univ. of Md., 1879.		
Johnson, J. G., Charlotte	1913	1915
Med. Dept. of Vanderbilt Univ., 1899.		

Name and Address	*Licensed*	*Joined State Society*
Lafferty, Robt. H., Charlotte N. C. Med. Coll., 1906.	1906	1906
Meisenheimer, C. A. (Hon.), Charlotte N. Y. Univ. Med. Coll., 1882.	1882	1882
Montgomery, John C., Charlotte N. Y. Univ. Med. Coll., 1891.	1891	----
Moore, Alexander W., Charlotte Univ. of Va., 1901; Univ. of N. Y., 1902.	1912	1912
Moore, Oren, Charlotte N. C. Med. Coll., 1911.	1911	1911
Myers, John Q., Charlotte N. C. Med. Coll., 1904.	1904	1904
Nalle, B. C., Charlotte Univ. of Va., 1903.	1905	1905
Newell, Leone B., Charlotte Univ. of N. C., 1905.	1905	1905
Nisbet, Walter O., Charlotte Med. Coll. of S. C., 1889.	1889	1889
Patterson, Reid, Charlotte, R.F.D.	----	----
Peeler, Clarence N., Charlotte N. C. Med. Coll., 1906.	1906	1906
Petrie, Robt. Wm., Charlotte Univ. of Md., 1903.	1903	1903
Petteway, Geo. H., Charlotte, R.F.D. N. C. Med. Coll., 1913.	1913	1914
Pharr, W. W. (Hon.), Charlotte P. and S., Balt., 1882.	1883	1883
Pressley, Geo. W., Charlotte Jefferson Med. Coll., Phila., 1892.	1895	1895
Query, Richard Z., Charlotte, R.F.D. Univ. Coll. of Med., Va., 1907.	1907	1907
Ransom, John Lester, Pineville N. C. Med. Coll., 1911.	1911	1911
Reid, Wm. K., Charlotte Univ. of N. Y., 1891.	1891	1891
Sadelson, G. H., Charlotte Univ. of Buffalo, 1876.	1885	----
Strong, Chas. Moore, Charlotte Univ. of Md., 1888.	1898	1898
Strong, Wm. Mason, Charlotte N. C. Med. Coll., Charlotte, 1904.	1904	----
Thompson, S. R., Charlotte N. C. Med. Coll., 1914.	1914	1915
Tydeman, F. W. L., Tulsa, Okla.	----	----
Walker, Chas. E., Charlotte Univ. of Md., 1891.	1891	1894
Whisnant, Albert M., Charlotte P. and S., Balt., 1893.	1893	1895
Witherspoon, B. J., Charlotte S. C. Med. Coll., 1894.	1900	1906
Wright, Thos. H., Charlotte Univ. of Va., 1901.	1904	1904

MITCHELL-WATAUGA COUNTY SOCIETY

(No members in good standing.)

MONTGOMERY COUNTY SOCIETY

President, Chas. B. Ingram, Mount Gilead Jefferson Med. Coll., Phila., 1886.	1886	1902

Name and Address	*Licensed*	*Joined State Society*
Secretary, H. B. Hoyle, Biscoe	1896	1903
N. C. Med. Coll., 1896.		
Andrews, Vernon L., Mount Gilead	1909	----
Univ. Coll. of Med., Va., 1909.		
Armstrong, C. W. Troy	1914	1915
Univ. of Md., 1914.		
Daligny, Charles, Troy	1885	1902
Military Med. School, Paris, 1878.		
Dameron, Ernest L., Star	1911	----
N. C. Med. Coll., 1911.		
Shamburger, John B., Star	1890	1892
Univ. of Md., 1890.		
Thompson, Alexander F., Troy	1855	1902
Med. Coll. of Ind., 1895.		

MOORE COUNTY SOCIETY

President, Gilbert M. McLeod, Carthage	1885	1904
Univ. of Md., 1882.		
Secretary, A. McN. Blue, Carthage	----	----
Achorn, John W., Pine Bluff	1899	----
Med. School of Maine, 1887; Bellevue Med. Coll., 1889.		
Blair, A. McN., Southern Pines	1905	1905
Univ. of N. Y., 1897.		
Davis, Jos. F., Glendon	1912	----
Med. Coll. of Va., 1912.		
McDonald, Augustus A., Jackson Springs	1905	1912
N. C. Med. Coll., 1905.		
McLeod, A. H., Aberdeen	1896	1904
Balt. Med. Coll., 1896.		
McMillan, John M., Hemp	1909	1910
Atlanta Coll. of P. and S., 1909.		
Marr, M. W., Pinehurst	----	----
Matthews, John H., Vass	1907	1908
Univ. of N. C., 1907.		
Mudgett, W. C., Southern Pines	1908	1908
Univ. of Md., 1903.		
Shields, Henry B. Carthage	1887	1904
Atlanta Med. Coll., 1882.		
Street, M. E., Glendon	1893	1902
P. and S., Balt., 1893.		
Swett, Wm. P., Southern Pines	1893	1901
Univ. of Vermont, 1876.		
Thompson, Fred., Pine Bluff	1912	----
Harvard Univ., 1888.		

NASH COUNTY SOCIETY

President, E. S. Boice, Rocky Mount	1914	----
Univ. of Pa., Phila., 1909.		
Secretary, H. Lee Large	----	----
Battle, Ivan Proctor, Rocky Mount	1889	----
Univ. of Md., 1889.		
Battle, James P., Nashville	1888	----
Univ. of Md. and the Coll. of P. & S., Balt., 1889.		
Brantley, Hassell, Spring Hope	1888	----
Jefferson Med. Coll., Phila., 1888.		
Coppage, T. O., Nashville	----	----
Kornegay, Lemuel W., Rocky Mount	1906	1906
N. C. Med. Coll., 1906.		
Lane, John L., Rocky Mount	1906	1906
N. C. Med. Coll., 1906.		

Name and Address	*Licensed*	*Joined State Society*
Marriott, Henry B., Battleboro Missouri Med. Coll., St. Louis, 1883.	1883	----
Martin, J. H., Red Oak	----	----
Matthews, Thos. A., Castalia Univ. of Med., 1890.	1891	----
Perry, H. G., Woods	----	----
Putney, R. H., Elm City Med. Coll. of Va., 1914.	1914	----
Quillen, Emile B., Rocky Mount Univ. of Md., 1904.	1906	----
Speight, J. A., Rocky Mount Jeff. Med. Coll. of Phila., 1906.	1906	----
Speight, J. P., Rocky Mount, R.F.D. Jeff. Med. Coll. of Phila., 1906.	1906	----
Speight, R. H. (Hon.), Whitakers	----	----
Staley, S. Walter, Rocky Mount Med. Coll. of State of S. C., 1901.	1901	----
Strickland, J. T., Nashville Univ. of Md., 1890.	1890	----
Whitehead, J. P., Rocky Mount Univ. of Md., 1899.	1899	----
Willis, B. C., Rocky Mount Med. Coll. of Va., 1909.	1915	----

NEW HANOVER COUNTY SOCIETY

President, E. R. Hart, Wilmington	----	----
Secretary, A. B. Croom, Wilmington	----	----
Bellamy, Robt. H., Wilmington Jefferson Med. Coll., Phila., 1902.	1902	1902
Bellamy, W. J. H. (Hon.), Wilmington Univ. of N. Y., 1868.	1870	1870
Bolles, Chas. P., Jr., Wilmington Univ. of Va., 1897.	1908	1908
Bowdoin, Geo. E., Wilmington Med. Coll. of Va., 1904.	1914	----
Bullock, W. W. (Hon.), Wilmington Univ. of Med., 1873.	1875	1875
Causey, P. P., Wilmington Univ. of Md., 1897.	----	----
Galloway, W. C. (Hon.), Wilmington Washington Univ. School of Med., 1874.	1880	1880
Graham, B. R., Wilmington Univ. of Va., 1895.	1895	----
Green, Thos. M., Wilmington Univ. of Md., 1900.	1900	1903
Hall, Wright (Hon.), Wilmington Univ. of Md., 1900.	1900	1900
Honnett, Jos. Harry, Wilmington P. and S., N. Y., 1900.	1901	1904
Koonce, S. Everett, Wilmington P. and S., Balt., 1896.	1896	1900
LeGwin, John B., Wilmington Tulane Univ. of La., 1911.	1913	----
Love, W. J. (Hon.), Wilmington S. C. Med. Coll., 1861.	1861	1870
McDonald, A. D. (Hon.), Wilmington Wash. Univ. Med., 1877.	1870	1870
McMillan, W. D. (Hon.), Wilmington Univ. Md., 1868.	----	1901

Name and Address	*Licensed*	*Joined State Society*
Mebane, W. C., Wilmington	1905	----
N. C. Med. Coll., 1905.		
Moore, Wm. Houston, Wilmington	1910	1911
Jefferson Med. Coll., Phila., 1910.		
Murphy, John G., Wilmington	1903	1905
Univ. Louisville, 1903.		
Schonwald, J. L. (Hon.), Wilmington	1880	1904
Long Island Med. Coll., 1879.		
Sidbury, J. B., Wilmington	1915	----
Columbia Univ., N. Y., 1912.		
Slocum, Robt. B., Wilmington	1907	1908
Johns Hopkins, 1905.		
Tankersley, J. W., Wilmington	----	----
Thomas, G. G. (Hon.), Wilmington	1871	1871
Univ. of Md., 1871.		
Wessell, John Chas., Wilmington	1900	1900
Univ. of Md., 1900.		
Willingham, Benj. Chas., Wilmington	----	----
Wood, Edmond J., Wilmington	1903	1903
Univ. of Pa., 1902.		

NORTHAMPTON COUNTY SOCIETY

President, Paul C. Brittle, Conway	1907	1907
Univ. Col. of Med., Va., 1907.		
Secretary, L. E. McDaniels, Lasker	1915	----
Univ. of Md., 1911.		
Bolton, Mahlon, Rich Square	1885	1885
Jefferson Med. Coll., Phila., 1885.		
Cooke, Quinton H., Woodland	1905	1907
Univ. of N. C., 1905.		
Joyner, T. O., Severn	1899	----
Univ. Coll. of Med., Richmond, 1899.		
Lassiter, Edgar W., Rich Square	1908	1908
Univ. Coll. of Med., Va., 1908.		
Lewis, Henry W., Jackson	1885	1887
Univ. of N. Y., 1877.		
Lister, J. L., Jackson	1896	1909
Med. Coll. of Va., 1896.		
Parker, Clifton G., Woodland	1907	1909
Univ. Coll. of Med., Va., 1907.		
Register, F. M., Jackson	----	----
Stephenson, M. R., Seaboard	1885	----
Univ. of Md. and the Coll. of P. & S., Balt., 1881.		

ONSLOW COUNTY SOCIETY

President, Carl W. Sutton, Richlands	1905	----
Tulane Med. Coll., 1905.		
Secretary, A. M. McCuiston, Richlands	1911	1911
N. C. Med. Coll., 1911.		
Bryan, L. D., Snead's Ferry	1910	1910
Tulane, 1910.		
Cox, E. L., Jacksonville	1892	1899
Univ. of Md., 1889.		
Duffy, Richard N., New Bern	1907	----
Johns Hopkins Univ., Med. Dept., 1906.		
Hammond, A. F., Pollocksville	1903	----
Univ. Coll. of Med., 1903.		
Thompson, Cyrus, Jacksonville	1885	1905
Univ. of Pa., 1878.		

PAMLICO COUNTY SOCIETY

Name and Address	*Licensed*	*Joined State Society*
President.	----	----
Secretary.	----	----
Attmore, G. S. (Hon.), Stonewall	1870	1872
Washington Univ. School of Med., 1870.		
Dees, Daniel A., Bayboro	1903	----
Balt. Med. Coll., 1903.		
McCotter, St. Elmo, Bayboro	1908	1908
P. and S., Atlanta, 1908.		
Purdy, J. J., Oriental	1914	----
Med. Coll. of Va., 1900.		

PASQUOTANK-CAMDEN-DARE COUNTY SOCIETY

President. R. L. Kendrick, Elizabeth City	1913	1915
Univ. of Va., 1913.		
Secretary. R. B. Davis, Weeksville	----	----
Med. Coll. of Va., Richmond, 1915.		
Aydlett, Herbert T., Elizabeth City	1895	1896
Univ. of Va., 1894.		
Fearing, Isaiah, Elizabeth City	1896	1904
P. and S., Balt., 1896.		
Fearing, Zenas, Jr., Elizabeth City	1901	1904
Univ. Coll. of Med., 1901.		
Griggs, John B., Elizabeth City	1892	1904
Univ. of Md., 1892.		
Hoggard, W. A., Woodville	1907	1910
Univ. Coll. of Med., Va., 1907.		
Johnson, W. W., Manteo	----	----
Lister, E. W., Weeksville	1896	----
Med. Coll. of Va., 1896.		
Newby, G. E., Hertford	1901	----
Jefferson Med. Coll., Phila., 1900.		
Peters, W. A., Elizabeth City	1915	----
Med. Coll. of Va., 1915.		
Saliba, John Elizabeth City	1914	1915
Univ. of Edinburgh, Scotland.		
Sawyer, Walter W., Elizabeth City	1903	1905
Univ. of Md., 1903.		
Stephens, W. L., Indian Town	1912	----
Univ. Coll. of Med., Va., 1912.		
Walker, Herbert D., Elizabeth City	1902	1902
Univ. of Md., 1902.		
Williams, Claude B., Elizabeth City	1903	1906
Univ. Coll. of Med., Va., 1903.		

PENDER COUNTY SOCIETY

(No members in good standing.)

PERQUIMANS COUNTY SOCIETY

President, Thos. A. Cox, Hertford	1907	----
Univ. of Md., 1892.		
Secretary, Robt. Walker Smith, Hertford	----	----
Dillard, Richard (Hon.), Edenton	1880	1880
Jeff. Med. Coll., 1879.		
McMillan, J. D. (Hon.), Edenton	----	----

PERSON COUNTY SOCIETY

(No members in good standing.)

PITT COUNTY SOCIETY

Name and Address	*Licensed*	*Joined State Society*
President,	----	----
Secretary,	----	----
Dawson, Walter W., Grifton Univ. of Md., 1897.	1897	1900
Hemingway, J. D., Bethel	----	----
Laughinghouse, Chas. O'H., Greenville Univ. of Pa., 1893.	1893	1894
Nobles, G. E. (Hon.), Greenville Jefferson Med. Coll., Phila., 1899.	1899	1902
Whitfield, W. C. (Hon.), Grifton Univ. of Md., 1884.	1884	1884

POLK COUNTY SOCIETY

(See Henderson)

RANDOLPH COUNTY SOCIETY

President, Thomas I. Fox, Franklinville Vanderbilt Univ., 1894.	1899	1904
Secretary, C. A. Hayworth, Coleridge Univ. of Md. and the Coll. of P. and S., Balt., 1913.	1913	----
Asbury, F. E. (Hon.), Worthville S. C. Med. Coll., 1876.	1885	1896
Craven, F. C., Ramseur Univ. of Md., 1913.	1913	----
Fox, D. L., Randleman Vanderbilt Univ., 1894.	1899	1904
Hubbard, C. C., Farmer Jefferson Med. Coll., Phila., 1888.	1890	1904
Hunter, John V., Asheboro Univ. of Louisville, 1898.	1898	1904
Miller, J. F., Asheboro Med. Chirurgical Coll. of Phila., 1906.	1915	----
Moore, Wm. Jas., Asheboro P. and S., Balt., 1893.	1893	1901
Tate, C. S., Ramseur Balt. Med. Coll., 1893.	1896	----
Wilkerson, Chas. E., Randleman	----	----

RICHMOND COUNTY SOCIETY

President, L. D. McPhail, Rockingham Univ. of Md., 1900.	1900	1902
Secretary, Avery C., Everette, Rockingham Univ. of Md., 1897.	1897	1903
Fowlkes, John I., Hamlet P. and S., Atlanta, 1903.	1903	----
Garrett, Frank B., Rockingham N. C. Med. Coll., 1912.	1912	----
Garrett, Frank J., Rockingham Univ. of Md., 1889.	1887	1903
James, W. D., Hamlet Jeff. Med. Coll. of Phila., 1908.	1908	----
Kinsman, Henry F., Hamlet Univ. of Vermont, 1894.	1897	1904

Name and Address	*Licensed*	*Joined State Society*
Ledbetter, J. M., Rockingham	1894	1903
Vanderbilt Univ., 1894.		
McIntosh, W. P., Roberdell	----	----
Terry, Wm. C., Hamlet	1912	----
N. C. Med. Coll., 1911; Univ. of Md., 1912.		
Webb, W. P., Cordova	1897	1904
Med. Coll. of S. C., 1897.		

ROBESON COUNTY SOCIETY

President,	----	----
Secretary,	----	----
Costner, Thos. E., Lumberton	----	----
Johnson, Thos. C., Lumberton	1905	1905
Univ. Coll. of Med., Va., 1905.		
McMillan, B. F. (Hon.), Red Springs	1884	1884
Univ. of Md., 1882.		
McMillan, J. L. (Hon.), Red Springs	----	----
Martin, J. A., Lumberton	1915	1916
Med. Coll. of Va., Richmond, 1915.		
Nash, Fred., St. Pauls	1914	----
N. C. Med. Coll., 1914.		
Pope, Henry T., Lumberton	1893	1894
N. C. Med. Coll., 1894.		
Thompson, Neill A., Lumberton	1895	1904
Maryland Med. Coll., 1905.		

ROCKINGHAM COUNTY SOCIETY

President,	----	----
Secretary,	----	----
Abernethy, Miles B., Reidsville	----	----
Cummings, M. P., Reidsville	1911	1911
Jefferson Med. Coll., 1911.		
Ellington, Samuel B., Wentworth	----	----
Harrison, H. H., Mayodan	----	----
Johnson, W. A., Reidsville, R.F.D.	1909	1909
N. C. Med. Coll., 1907.		
McGhee, John W., Reidsville	----	----
Martin, S. S., Leaksville	1892	1896
Balt. Med. Coll., 1892.		
Matthews, Wm. W., Spray	1915	----
Chicago Coll. of Med. and Surg., 1913.		
Ray, John B., Leaksville	1898	1898
Balt. Med. Coll., 1898.		
Taylor, Jas. Thos., Madison	1908	----
Univ. of Md. and the Coll. of P. and S., Balt., 1908.		
Taylor, Thos. G., Leaksville	1877	----
Ky. School of Med., 1877.		
Tuttle, A. F., Spray	1901	1901
N. C. Med. Coll., 1901.		
Webb, S. E., Draper	1908	1908
N. C. Med. Coll., 1908.		
Wilson, Walter P., Madison	1908	1909
N. C. Med. Coll., 1908.		

ROWAN COUNTY SOCIETY

President, G. A. Brown, Mt. Ulla	1897	1898
Univ. of Va., 1897.		
Secretary, Harold H. Newman, Salisbury	1914	----
Johns Hopkins Univ., Balt., 1913.		

Name and Address	*Licensed*	*Joined State Society*
Boyden, Wm. C., China Grove	1913	1914
N. C. Med. Coll., 1913.		
Brawley, M. H., Salisbury	1912	1914
N. C. Med. Coll., 1910.		
Brawley, Robt. V., Salisbury	1903	1904
Univ. Coll. of Med., Va., 1903.		
Busby, Julian G., Spencer	1904	1904
Univ. of Md., 1904.		
Choate, Glenn Wm., Rockwell	1909	1909
N. C. Med. Coll., 1909.		
Currie, Edw. W., Salisbury	1907	1907
N. C. Med. Coll., 1907.		
Currie, Edw. W., Salisbury	1907	1907
N. C. Med. Coll., 1907.		
Heilig, Herman G.	1899	1904
Univ. of Md., 1899.		
Monk, Henry L., Spencer	1899	1903
Med. Coll. of Va., 1897.		
Peeler, John H., Granite Quarry	----	----
Shafer, Irving E., Gold Hill	1914	1914
N. C. Med. Coll., 1914.		
Sigman, F. G., Spencer	1909	1909
Univ. Coll. of Med., Va., 1909.		
Spencer, Frederick B., Salisbury	1909	1910
Univ. of N. C., 1909.		
Stokes, Jas. Ernest, Salisbury	1900	1901
Univ. of Md., 1892.		
Trantham, H. L. (Hon.), Salisbury	1878	1879
Univ. of N. Y., 1875.		
Van Poole, C. M. (Hon.), Salisbury	1880	1880
P. and S., Balt., 1880.		
West, Robert M., Salisbury	1900	1904
Med. Coll. of Va., 1900.		
Whitehead, John (Hon.), Salisbury	1880	1880
Univ. of Pa., 1880.		
Whitehead, J. W. (Hon.), Salisbury	1880	1880
Univ. of Pa., 1880.		
Woodson, Chas. W., Salisbury	1905	1907
P. and S., New York, 1904.		

RUTHERFORD COUNTY SOCIETY

President,	----	----
Secretary,	----	----
Allhands, John M., Cliffside	1910	1910
Chicago Coll. and Surg., 1910.		
Andrews, Robt. M., Union Mills, R.F.D. 1	1904	1904
Memphis Hosp. Med. Coll., 1904.		
Biggs, M. H., Rutherfordton	1907	1907
Univ. of Pa., 1897.		
Bostic, Wm. C. Forest City	1905	1905
N. C. Med. Coll., 1905.		
Brackett, W. C., Caroleen	1915	----
Jeff. Med. Coll. of Phila., 1915.		
Gold, Chas. F., Ellenboro	1910	1910
Univ. of N. C., 1910.		
Harrill, L. B., Caroleen	1902	1904
Grant Univ., 1897.		
Hicks, Romeo, Henrietta	----	1904
Southern Med. Coll., Atlanta, 1888.		

Name and Address	*Licensed*	*Joined State Society*
Reid, Geo. P., Forest City	1894	1899
Univ. Coll. of Med., Va., 1895.		
Rucker, A. A., Rutherfordton	----	----
Schenck, E. R., Rutherfordton	----	----
Shull, J. R., Cliffside	1911	1912
Univ. of Pa., 1911.		
Thompson, J. B., Cliffdale	1898	1904
P. and S., Balt., 1898.		
Thompson, W. A., Rutherfordton	1895	1904
Twitty, John C., Rutherfordton	1892	1906
Balt, Med. Coll., 1892.		
Williams, L. L., Union Mills	1913	----
Md. Med. Coll., 1913.		
Wiseman, Chas. B., Henrietta	1902	1902
P. and S., Balt., 1902.		

SAMPSON COUNTY SOCIETY

President, E. T. Hollingsworth, Ivanhoe	1912	1915
N. C. Med. Coll., 1912.		
Secretary, Paul Crumpler, Clinton	1907	1907
Univ. of Tenn., 1907.		
Beard, G. C., Kerr, R.F.D.	1912	----
Univ. of Md. and the Coll. of P. and S., Balt., 1912.		
Matthews, Jas. O., Clinton	1897	1898
Univ. Coll. of Med., Va., 1897.		
Page, B. W., Clinton	----	----
Sessoms, E. T., Turkey	----	----
Sikes, Gibson L., Salemburg	1900	1900
Univ. Coll. of Med., Va., 1900.		
Stevens, John A. (Hon.), Clinton	1883	1883
Jefferson Med. Coll., Phila., 1883.		
Underwood, O. E., Roseboro	1909	1910
Univ. Coll. of Med., Va., 1909.		
Wilson, Robt. B., Newton Grove	1889	1904
Ky. School of Med., 1889.		

SCOTLAND COUNTY SOCIETY

President, Peter John, Laurinburg	1897	1904
Univ. of Md., 1897.		
Secretary, Allen McLean, Laurinburg	1908	1908
Univ. of Md., 1908.		
Erwin, Evan A., Laurinburg	1912	1913
Med. Coll. of S. C., 1912.		
Gibson, John S., Gibson	1905	1905
Univ. of Md., 1905.		
Hunter, N. C., Laurinburg	1899	----
Medico-C. of Phila., 1899; Univ. Coll. of Md.; N. Y. P. G. Med. School and Hosp., 1909.		
Livingston, Everitt A., Gibson	----	----
Univ. of Md., 1912.		
Pate, Jas. G., Gibson	----	----
Prince, D. M. (Hon.), Laurinburg	1871	1878
S. C. Med. Coll., 1871.		
Shaw, W. G., Laurinburg	1895	1904
P. and S., Balt., 1892.		
Wilcox, J. W., Laurel Hill	1906	1906
Univ. of N. C., 1906.		

STANLY COUNTY SOCIETY

Name and Address	*Licensed*	*Joined State Society*
President, Julius C. Hall, Albemarle	1899	1899
Univ. Coll. of Med., Va., 1890.		
Secretary, C. M. Lentz, Albemarle	----	----
Atkins, B. T., Badin	----	----
Allen, Jas. A., New London	1901	1906
Univ. Coll. of Med., Va., 1901.		
Anderson, Jasper N., Albemarle	1895	1895
Univ. of Md., 1895.		
Campbell, Jas. I., Norwood	1898	1904
Undergraduates N. C. Med. Coll.		
Hartsell, F. E., Albemarle	1895	1905
Balt. Med. Coll., 1895.		
Hill, Wm. I., Albemarle	1897	----
Univ. of Md. and the Coll. of P. and S., Balt., 1897.		
Laton, Jas. F., Albemarle	1904	1908
N. C. Med. Coll., 1904.		
Lyday, C. E., Albemarle	1910	----
Atlantic School of Med., 1910.		
Whitley, Daniel P., Albemarle, R.F.D.	1890	1890
Univ. of Md., 1889.		

STOKES COUNTY SOCIETY

President, W. L. McCanless, Danbury	1893	1904
Univ. of N. Y., 1893.		
Secretary, Wm. V. McCanless, Danbury	1893	1894
P. and S., Balt., 1888.		
Hill, L. N. (Hon.), Germantown	----	----
Phillips, M. D., Dalton	1881	1904
Univ. of N. Y., 1881.		
Tuttle, Reuben G., Walnut Cove	1909	1912
N. C. Med. Coll., 1909.		

SURRY COUNTY SOCIETY

President, Robt. E. L. Flippin, Pilot Mountain	1897	1897
Balt. Med. Coll., 1892.		
Secretary, M. S. Martin, Mount Airy	1909	----
Univ. Coll. of Med., Va., 1905.		
Ashby, E. C., Mount Airy	1914	----
Univ. of Pa., Phila., 1914.		
Ashby, Thos. B., Mount Airy	1885	1896
P. and S., Balt., 1885.		
Baird, Campbell A., Mount Airy	1909	1909
N. C. Med. Coll., 1904.		
Divers, Geo. T., Mount Airy	1909	1916
Univ. Coll. of Med., Richmond, 1909.		
Flippin, James M., Mount Airy	1884	1893
P. and S., Balt., 1884.		
Flippin, Samuel T. Slioam	1898	1898
N. C. Med. Coll., 1898.		
Gambill, Ira S., Dobson	1912	1912
N. C. Med. Coll., Charlotte, 1912.		
Hollingsworth, Edw. M., Mount Airy	1886	1904
P. and S., Balt., 1886.		
Hollingsworth ,Robert E., Mount Airy	1898	1898
Univ. Coll. of Med., Va., 1898.		
Jones, A. F., Ararat	1915	----
N. C. Med. Coll., Charlotte, 1915.		

Name and Address	*Licensed*	*Joined State Society*
Lancaster, R. M., Dobson	----	----
N. C. Med. Coll., Charlotte, 1914.		
Moorefield, R. H., Westfield, R.F.D. 1	1906	1906
N. C. Med. Coll., Charlotte, 1906.		
Reece, Jas. M., Elkin	1904	----
P. and S., Balt., 1886.		
Ring, Jos. W., Elkin	1885	1904
P. and S., Balt., 1880.		
Rowe, H. B., Mount Airy	1910	1912
Univ. of Md., 1910.		
Royall, M. A., Elkin	1885	1891
P. and S., Balt., 1885.		
Salmons, Lee Roy, Jonesville	----	----
Smith, J. B., Pilot Mountain	1885	1896
P. and S., Balt., 1885.		
Smith, J. T., Westfield	----	----
Taylor, Wm. S., Mount Airy	1874	1894
Jefferson Med. Coll., Phila., 1874.		
Wellborn, Wm. R., Elkin	1908	1908
N. C. Med. Coll., 1905.		
Woltz, John L., Mount Airy	1902	1902
Southern Med. Coll., Ga., 1897.		

SWAIN COUNTY SOCIETY

President, Aurelius M. Bennett, Bryson City	1885	----
Louis. Med. Coll., 1885.		
Secretary, J. L. Reeves, Whittier	----	----
Bennett, P. R., Bryson City	1916	1917
Univ. of Md., 1916.		
Bryson, Daniel R., Bryson City	1900	----
Univ. of Md. and the Coll. of P. and S., Balt., 1900.		
Cooper, J. A., Bryson City	----	----
DeHart, James, Bryson City	1909	----
Univ. of Nashville, 1900.		
Holt, R. D., Cherokee	----	----

TRANSYLVANIA COUNTY SOCIETY

(No members in good standing.)

TYRRELL COUNTY SOCIETY

(See Washington)

UNION COUNTY SOCIETY

President, John E. Ashcraft, Monroe	1887	1888
Univ. of N. Y., 1887.		
Secretary, R. H. Garren, Monroe	----	----
Armfield, Romulus, Marshville	1883	1904
Med. Coll. of Va., 1881.		
Blair, M. P., Marshville	1895	1895
Med. Coll .of Va., 1895.		
Eubanks, Jas. B., Monroe	1887	1904
Vanderbilt Univ., 1887.		
Guin, L. E., Waxhaw	1907	1908
N. C. Med. Coll., 1907.		
Jerome, J. R., Wingate	1890	1904
Univ. of Md., 1890.		
McCain, Wm. R., Waxhaw	1898	1906
Univ. Md., 1897.		

Name and Address	*Licensed*	*Joined State Society*
Nance, Geo. B., Monroe	1885	1885
Jefferson Med. Coll., Phila., 1885.		
Neal, John W., Monroe	----	----
Payne, Robt. Lee, Monroe	1911	1912
Tulane Univ., 1911.		
Perkins, David R., Marshville	1906	1906
Balt. Med. Coll., 1903.		
Stevens, Samuel A., Monroe	1898	1898
Univ. of Md., 1900.		
Stewart, Henry D., Monroe	1898	1898
Univ. of Md., 1898.		
Whitley, A. D. N., Unionville	----	----

VANCE COUNTY SOCIETY

President,	----	----
Secretary,	----	----
Allen, Benj. G., Henderson	1904	1904
Bellevue Med. Coll., 1904.		
Bass., H. H., Henderson	1899	1900
Univ. of Md., 1899.		
Gill, Robt. J., Henderson	1880	1890
Univ. Pa., 1880.		
Harris, F. R. (Hon.)	1882	1890
Univ. of Va., 1881.		

WAKE COUNTY SOCIETY

President, Claude O. Abernethy, Raleigh	1906	1906
Univ. of N. C., 1906.		
Secretary, K. P. Battle, Jr. (Hon.), Raleigh	1882	1882
Univ. of Va., 1881; Bellevue Hosp. Med. Coll., 1882.		
Adams, R. K., Raleigh	1912	----
Jeff. Med. Coll., Phila., 1912.		
Aiken, Alfred, Wake Forest	1911	1916
Univ. Med. Coll. 1911.		
Anderson, Albert, Raleigh	1888	1888
Univ. of Va., 1888.		
Bell, Geo. M., Wakefield	----	1903
P. and S., Balt., 1885.		
Blalock, N. M. Gulley,s Mill	1890	1890
P. and S., Balt., 1890.		
Bonner H. M., Raleigh	----	----
Buchanan, L. T., Wake Forest	----	----
Buffalo, J. S., Garner	1900	1904
Balt. Med. Coll., 1900.		
Burt, Benj. W., New Hill	1886	1904
P. and S., Balt., 1886.		
Carroll, E. D. Dixon, Raleigh	1900	1900
Woman's Med. Coll., N. Y., 1895.		
Caveness, Z. M., Raleigh	1903	1903
Univ. of N. C., 1903.		
Cheek, C. E., Fuquay Springs	1912	----
Univ. Coll. of Med., Va., 1912.		
Cooper, G. M., Raleigh	----	----
Crouch, A. McR., Raleigh	1915	----
Finch, O. E., Apex	1915	----
Jeff. Med. Coll., Phila., 1915.		
Fowler, M. L., Rolesville	----	1904
P. and S., Balt., 1881.		
Gibson, M. R., Raleigh	1905	1908
Univ. of N .C., 1905.		

Name and Address	*Licensed*	*Joined State Society*
Goodwin, Andrew W., Raleigh	1889	1889
Bellevue Med. Coll., 1887.		
Greenwood, A. B., Raleigh	----	----
Harper, J. H., Zebulon	----	----
Haywood, Hubert, Raleigh	1889	1889
Bellevue Med. Coll., 1879.		
Haywood, Hubert B., Jr., Raleigh	1909	----
Univ. of Pa., 1909.		
Hester, Jos. R., Knightdale	1910	1911
Univ. of N. C., 1910.		
Horton, M. C., Raleigh	1911	----
Univ. Coll. of Med., Va., 1903.		
Horton, Wm. C., Raleigh	1896	1896
P. and S., Balt., 1897.		
Jenkins, Chas. L., Raleigh	1890	1892
N. Y. Univ. Med. Coll., 1890.		
Johnson, Robt. Wade, Apex	1901	1901
Univ. of Tenn., 1900.		
Jordan, Thos. M., Raleigh	1881	1881
P. and S., Balt., 1881.		
Judd, Eugene C., Raleigh	1911	----
Univ. of Pa., 1911.		
Judd, Jas. M., Cardenas	1899	1899
Balt. Med. Coll., 1897.		
Knox, A. W. (Hon.) Raleigh	1878	1880
Bellevue Med. Coll., 1874.		
Lewis, R. H. (Hon.), Raleigh	1877	1877
Univ. of Md., 1871.		
Lowery, John R., Raleigh	1904	----
Univ. of Md., 1904.		
McDowell, F. C., Zebulon	----	----
McGee, Jas. Wm., Jr., Raleigh	1888	1888
Bellevue Med. Coll., 1888.		
Penny, J. A. J., Vanteen	----	1904
Univ. of N. Y., 1861.		
Perry, A. H., Eagle Rock	----	----
Rankin, W. S., Raleigh	1901	1901
Univ. of Md., 1901.		
Ray, O. L., Bangor	1899	1904
Univ. Coll. of Med., 1899.		
Riggsbee, A. E., Cary	1909	----
Univ. of N. C., 1909.		
Rogers, Jas. R., Raleigh	1886	1904
P. and S., Balt., 1886.		
Root, Aldert S., Raleigh	1911	----
Univ. of Pa., 1911.		
Royster, Hubert A., Raleigh	1894	1895
Univ. of Pa., 1894.		
Royster, W. I. (Hon.), Raleigh	1869	1869
Bellevue, 1868.		
Shore, Clarence A., Raleigh	1909	1909
Johns Hopkins, 1907.		
Sorrell, L. P., Flint	----	1904
Med. Coll. of Va., 1875.		
Stancell, Wm. W., Raleigh	1906	----
Univ. Coll. of Med., Va., 1906.		
Templeton, Jas. M., Cary	1882	1904
Balt. Med. Coll., 1882.		
Thompson, S. W., Falls	----	1904
Med. Coll. of Va., 1875.		

Name and Address	*Licensed*	*Joined State Society*
Watson, John B., Raleigh	1908	----
Univ. of N. C., Chapel Hill, 1908.		
Wilkerson, Chas. B., Apex	1906	1907
Univ. of N. C., 1906.		
Wright, J. B., Raleigh	1899	----
Univ. Coll. of Med., 1899.		
Young, Lawrence B., Rolesville	1886	1907
P. and S., Balt., 1886.		

MEMBERS OF THE WAKE COUNTY SOCIETY WHO HAVE GONE TO THE WAR, AND FOR WHOM DUES HAVE BEEN PAID.

Bell, C. W., Raleigh	1915	1916
Coll. of P. and S., Balt., 1914.		
Campbell, A. C., Raleigh	1910	1912
Univ. of N. C., 1910.		
Carstarphen, W. T., Wake Forest	1911	----
Jefferson Med. Coll., Phila., 1904.		
Cozart, W. S., Holly Springs	1914	1916
Med. Coll. of Va., Richmond, Va., 1914.		
Ferebee, E. B., Raleigh	1885	1903
P. and S., Balt., 1885.		
Ellington, A. J., Raleigh	----	----
McGeachy, R. S., Raleigh	1894	1895
Bellevue Med. Coll., 1894.		
McKee, J. S., Raleigh	1908	1908
Univ. of Md., 1907.		
Moore, J. L., Wendell	1886	1892
P. and S., 1886.		
Mordecai, Alfred, Raleigh	1914	1916
Univ. of Md., Balt., 1914.		
Noble, R. P., Raleigh	----	----
Pendleton, A. S., Raleigh	----	----
Powers, J. B., Jr., Wake Forest	1907	----
Columbia Univ., Coll. of P. and S., New York City, 1907.		
Procter, I. M., Jr., Raleigh	1915	1916
Univ. of N. C., Chapel Hill, 1913; Univ. of Pa., Phila., 1915.		
Ray, J. E., Raleigh	----	----
Cornell Univ., 1912.		
Robinson, L. F., Raleigh (Dix Hill)	----	----
Jefferson Med. Coll. of Phila., 1912.		
Stevens, Ralph, Raleigh	----	----
Thompson, H. A., Raleigh	----	----
Turner, H. G., Raleigh	1907	----
Univ. of Pa., 1906.		
West, L. N., Raleigh	1912	1915
Jefferson Med. Coll., Phila., 1912.		
Wilkerson, T. E., Raleigh	1914	1915
Univ. of Pa., 1914.		

WARREN COUNTY SOCIETY

President,	----	----
Secretary,	----	----
Holt, Thos. J., Wise	1904	1904
Med. Coll. of Va., 1904.		
Macon, G. H., Warrenton	1910	1910
Univ. Coll. of Med., Va., 1910.		
Macon, P. J., Warrenton	1883	1883
Univ. of Md., 1883.		
Norton, N. D., Norlina	1909	1911
Univ. Coll. of Med., Va., 1909.		

Name and Address	Licensed	Joined State Society
Peete, Chas. H., Warrenton	1906	1906
Univ. of Pa., 1903.		
Rodgers, W. D., Jr., Warrenton	1913	1915
Jefferson Med. Coll., Phila., 1913.		

WASHINGTON-TYRRELL COUNTY SOCIETY

President, Wm. H. Hardison, Creswell	1871	1904
Washington Univ., Md., 1870.		
Secretary, W. H. Ward (Hon.), Plymouth	1886	1900
Univ. of Md., 1881.		
Halsey, Benj. F., Roper	1894	1894
Vanderbilt Univ., 1893.		
Hassell, Jas. L., Creswell	1886	1908
P. and S., Balt., 1886.		
Speight, John W., Roper	1885	1908
Kentucky School of Med., 1885.		
Spruill, J. L., Columbia	1895	1908
Univ. of Md., 1895.		

WAYNE COUNTY SOCIETY

President,	----	----
Secretary,	----	----
Bizzell, Thos. M., Goldsboro	1908	1908
Univ. of Md., 1908.		
Cobb, Wm. H., Goldsboro	1889	----
Jeff. Med. Coll. of Phila., 1889.		
Cox, B. W. P., Goldsboro	1915	----
N. C. Med. Coll., 1915.		
Daniels, O. C., Goldsboro	1903	----
Med. Coll. of Va., 1903.		
Faison, W. W. (Hon.), Golsboro	1883	1904
Jeff. Med. Coll., 1878.		
Ginn, T. L., Goldsboro	1901	1904
Med. Coll. of Va., 1901.		
Jones, Clara E., Goldsboro	1894	----
Woman's Medical Coll. of Pa., Phila., 1894.		
Lassiter, C. L., Fremont	----	----
Miller, Robt. B., Goldsboro	1900	1901
Med. Coll. of Va., 1898.		
Moore, J. E., Mount Olive	----	----
Oney, H. B., Goldsboro	----	----
Person, Edgar C., Pikeville	----	----
Smith, R. A. (Hon.), Goldsboro	1882	1882
Vanderbilt Univ., 1879.		
Smith, William H.	1907	1908
Univ. of Pa., 1906.		
Spicer, John, Goldsboro	1890	----
Bellevue Med. Coll., 1889.		
Steele, Wm. C., Mount Olive	1891	1894
Univ. Md., 1894.		
Strosnider, Chas. F., Mount Olive	----	----
Sutton, Wm. G., Seven Springs	1889	1896
Jeff. Med. Coll., 1889.		

WILKES COUNTY SOCIETY

President, Julius E., Duncan, North Wilkesboro	1907	----
Univ. Coll. of Med., Richmond, 1907.		
Secretary, Wm. P. Horton, North Wilkesboro	1896	----
Balt. Med. Coll., 1892.		

Name and Address	*Licensed*	*Joined State Society*
Gilreath, Frank H., North Wilkesboro Univ. of Nashville, 1898.	1898	----
Hutchens, Evan M., North Wilkesboro N. C. Med. Coll., Charlotte, 1896.	1896	----
Pegram, R. W. S., Canton Balt. Med. Coll., 1892.	1894	1908
Sink, C. S., Wilkesboro N. C. Med. Coll., 1912.	1912	1912
Turner, Jas. M., North Wilkesboro Univ. of Louisville, 1881.	1885	1904
White, John W., Wilkesboro Jefferson Med. Coll., Phila., 1889.	1889	1890

WILSON COUNTY SOCIETY

President, Wade H. Anderson, Wilson Univ. of Va., 1902.	1904	1903
Secretary, E. L. Strickland, Wilson	----	----
Anderson, Wm. S., Wilson Washington Univ., Balt., 1868.	1880	1880
Barnes, Benj. F., Elm City Univ. of Md., 1902.	1902	1902
Best, H. B., Wilson Univ. of N. C., 1907.	1907	1907
Dickinson, E. T., Wilson Med. Coll. of Va., 1895.	1895	1895
Grady, Leland V., Taylor N. C. Med. Coll., 1913.	1913	1914
Harrison, John S., Elm City Med. Coll. of Va., 1903.	1905	1908
Herring, Benj. S., Wilson Univ. of Mich., 1900.	1901	1901
Hoover, H. R., Black Creek Balt. Med. Coll., 1891.	1892	----
Lamm, Isaac W., Lucama Univ. Coll. of Med., Va., 1899.	1899	1899
Lewis, Geo. M., Wilson Univ. of Md., 1886.	1885	1892
Moore, C. E. (Hon.), Wilson Bellevue Med. Coll., 1875.	1875	1875
Moore, Edwin G., Elm City Univ. of Md., 1883.	1883	1890
Moore, K. C., Wilson Univ. of Mich., 1900.	1909	1910
Person, T. E., Stantonsburg N. C. Med. Coll., 1911.	1911	----
Powell, Henry H., Stantonsburg Med. Coll. of Va., 1911.	1911	1914
Smith, G. A., Black Creek Louisville Med. Coll., 1887.	1893	1894
Smith, L. J., Wilson	----	----
Williams, Albert F., Wilson Univ. of Md., 1901.	1901	1901
Wilson, T. H., Lucama	----	----

YADKIN COUNTY SOCIETY

(No members in good standing.)

YANCEY COUNTY SOCIETY

(No members in good standing.)

INDEX

PAGE

Adenoids in Children: A Review of the Lymphatic Circulation of the Pharyngeal Region—*Dr. C. N. Peeler* 250
Address, Annual, of President—*Dr. I. W. Faison* 17
Address of Welcome—*Dr. A. McNiel Blair* 9
Aiken, Dr. G. Alfred: Kidney With Inferior Renal Artery, Complete Ossification of Stylo-Hyoid Ligament, Thoracic and Abdominal Transposition 126
Aiken, Dr. G. Alfred 129, 156
Alphabetical List of Members of Medical Society, With Postoffice Addresses 386
Amebic Dysentery—*Dr. A. J. Warren* 76
Amebic Dysentery: Discussion by
Dr. Cyrus Thompson 79
Dr. E. J. Wood 79
Dr. R. L. Felts 79
Dr. A. J. Warren 79
Anderson, Dr. Albert 346, 348
Anderson, Dr. T. E. 38
Anesthetics in Obstetrics—*Dr. Otho B. Ross* 221
Angioneurotic Edema, a Cause of Hydrothorax—*Dr. Ben. H. Hackney* 104
Annual Report of the Secretary of the State Board of Health—*Dr. W. S. Rankin* 338
Announcements by the Chairman of the Committee of Arrangements—*Dr. L. B. McBrayer* 24
Appendicitis in Children—*Dr. J. F. Highsmith* 58
Appointment of Robert Lee Payne Committee 360
Armfield, Dr. Romulus 99
Asbury, Dr. F. E.: Some Phases of Medicine in the Past, Present and Future 100
Ashworth, Dr. W. C.: The Institutional and After Care of Drug Addicts 239
Auditing Committee, Report of 324
Bahnson, Dr. Henry T., Address of Presentation of Portrait—*Dr. George G. Thomas* 376
Bahnson, Dr. Henry T., Acceptance of Portrait of—*Col. J. Bryan Grimes* 378
Battle, Dr. J. T. J. 325, 326, 327, 328, 330
Bickett, Gov. T. W., Telegram of 275
Bilateral Pyelitis—Report of a Case—*Dr. Robert L. Felts* 210
Bitting, Dr. N. D.: On the Surgical Aspects of Toxic Goiter 167
Bitting, Dr. N. D. 133
Blair, Dr. A. McNiel 9, 38, 40, 55, 83
Blood Transfusion—*Dr. L. A. Crowell* 158
Blood Transfusion: Discussion by
Dr. J. W. Wallace 161
Dr. J. B. Sidbury 161
Blount, Dr. John G.: The Frequency of Retroflexion of the Uterus Following Labor; Its Causation, Prevention, Treatment 212
Bonner, Dr. H. M.—The Diagnosis of Acute Mastoiditis 257
Bonner, Dr. H. M. 249, 257, 259
Bonner, Dr. K. P. B. 332, 344

PAGE

Booker, Dr. L. S.: Subtotal Hysterectomy: Indications and Technique-- 156
Booker, Dr. L. S.---------- 166
Brown, Dr. B. W.: Control of Venereal Diseases in Extra Cantonment Areas ---------- 298
Carrel-Dakin Solution and Paraffin Dressings in Certain Conditions—*Dr. L. W. Kornegay*---------- 137
Cataract Accidents—*Dr. J. G. Johnston*---------- 254
Cataract Accidents: Discussion by
Dr. H. M. Bonner---------- 257
Dr. J. M. Lilly---------- 257
Committees Appointed: Robert Lee Payne Portrait---------- 360
Clinical Relation of Systolic and Diastolic Blood Pressure in the Diagnosis of Certain Acute Circulatory Conditions, The—*Dr. Harold H. Newman*-- 84
Clinical Relation of Systolic and Diastolic Blood Pressure in the Diagnosis of Certain Acute Circulatory Conditions, The: Discussion by
Dr. P. R. Hardee---------- 89
Congenital Syphilis—*Dr. J. Buren Sidbury*---------- 40
Congenital Syphilis: Discussion by
Dr. E. J. Wood---------- 55
Dr. A. McNiel Blair---------- 55
Dr. H. D. Stewart---------- 56
Dr. L. W. Elias---------- 57
Dr. E. J. Wood---------- 57
Dr. J. Buren Sidbury---------- 57
Conjoint Session of the State Board of Health and the State Medical Society ---------- 338
Control of Venereal Diseases in Extra Cantonment Areas—*Dr. B. W. Brown* ---------- 298
Councillor, Reports of Seventh District---------- 332
Crouch, Dr. A. M.: Protecting Physicians in the Administration of Public Health Laws ---------- 116
Crowell, Dr. A. J.: Diagnosis of Ureteral Calculi and Technique of Removal Without Operation---------- 141
Crowell, Dr. A. J., Motion by---------- 353
Crowell, Dr. A. J.----------330, 331, 344, 346
Crowell, Dr. L. A., Blood Transfusion---------- 158
Crowell, Dr. Samuel McKee, Sketch of Life of—*Dr. J. E. S. Davidson*----- 354
Davidson, Dr. John E. S.—Samuel McKee Crowell---------- 354
Development of Pathology as a Science—*Dr. T. M. West*---------- 133
Diagnosis of Acute Mastoiditis—*Dr. H. M. Bonner*---------- 257
Diagnosis of Acute Mastoiditis, The: Discussion by
Dr. F. W. Fassett---------- 259
Dr. H. M. Bonner---------- 260
Diagnosis of Ureteral Calculi and Technique of Removal Without Operation—*Dr. A. J. Crowell*---------- 141
Diagnosis of Ureteral Calculi and Technique of Removal Without Operation: Discussion by
Dr. J. W. Long---------- 144
Dr. J. M. Parrott---------- 144
Dr. E. T. Dickinson---------- 144

PAGE
Dickinson, Dr. E. T.: Improvements in Suprapubic Prostatectomy 144
Dickinson, Dr. E. T. 144, 147
Diseases That Can With Assurance be Referred to Absence of, or Derangement of Function of, the Ductless Glands—*Dr. Aldert Smedes Root* 29
Doctors Who Served on the Mexican Border 273
Diseases That Can With Assurance be Referred to Absence of, or Derangement With Function of, the Ductless Glands: Discussion by
Dr. R. H. Lafferty 33
Dr. E. J. Wood 34
Dr. H. D. Stewart 34
Dr. A. S. Root 35
Dodson, Dr. H. H. 267
Elias, Dr. L. W.: Sudden Death in Infancy 35
Elias, Dr. L. W.: What Public Health Owes the Infant 119
Elias, Dr. L. W. 40, 57
Esophageal Stricture—*Dr. J. B. Wright* 245
Esophageal Stricture: Discussion by
Dr. H. M. Bonner 249
Dr. J. M. Lilly 250
Examination Questions, 1918:
Pharmacology, Materia Medica and Therapeutics 382
Practice of Medicine 382
Chemistry and Hygiene 383
Obstetrics, Gynecology and Pediatrics 383
Physiology, Pathology and Bacteriology 383
Anatomy 384
Surgery 384
Examining Board, Committee, Report of 323
Executive Committee of the Volunteer Medical Service Corps for North Carolina 275
Existence of Tropical Sprue in North Carolina—*Dr. Edward J. Wood* 63
Existence of Tropical Sprue in North Carolina: Discussion by
Dr. B. E. Washburn 68
Dr. C. F. Strosnider 68
Dr. R. H. Lafferty 69
Dr. Benj. K. Hays 69
Dr. Joseph Goldberger 69
Dr. Edward J. Wood 70
Faison, Dr. I. W.: President's Annual Address 17
Faison, Dr. I. W. 63, 297, 325, 327, 328, 331, 332, 333, 334, 368
Fassett, Dr. F. W. 259
Fearing, Dr. Zenas 39
Felts, Dr. Robert L.: Bilateral Pyelitis: Report of a Case 210
Felts, Dr. R. L. 79
Ferrell, Dr. John A. 345
Foreword 1
Frequency of Retroflexion of the Uterus Following Labor; Its Causation, Prevention, Treatment, The—*Dr. John G. Blount* 212
Gardner, Dr. Fred. Mack: Invocation 16

PAGE
Gibbon, Dr. R. L. ---- 133
Goldberger, Dr. Joseph: The Preventive Treatment of Pellagra ---- 109
Goldberger, Dr. Joseph ---- 69, 347
Grimes, Col. J. Bryan: Acceptance of Portrait of Dr. Henry T. Bahnson ---- 378
Hackney, Dr. Ben. H.: Angioneurotic Edema, a Cause of Hydrothorax ---- 104
Halford, Dr. J. W. ---- 221
Hardee, Dr. P. R. ---- 89, 114, 344, 345
Hargrove, Dr. W. F. ---- 327
Harris, Dr. F. R.: Response to Address of Welcome ---- 14
Hays, Dr. Benj. K.: James L. Nicholson ---- 367
Hays, Dr. Benj. K. ---- 69, 296, 322, 325, 328, 329, 330, 331
Highsmith, Dr. J. F.: Appendicitis in Children ---- 58
Highsmith, Dr. J. F.: Augustus S. Rose ---- 373
Hodges, Dr. J. Allison ---- 335
Hospital Association, Report of ---- 322
House of Delegates, Proceedings of ---- 317
Improvements in Suprapubic Prostatectomy—*Dr. E. T. Dickinson* ---- 144
Incidence and the Importance of Pleurisy in Early Tuberculosis, The—*Dr. P. P. McCain* ---- 80
Incidence and the Importance of Pleurisy in Early Tuberculosis, The: Discussion by
Dr. A. McNiel Blair ---- 83
Dr. P. P. McCain ---- 83
Institutional and After Care of Drug Addicts, The—*Dr. W. C. Ashworth* ---- 239
Introduction of officers ---- 336
Invocation—*Dr. Fred. Mack Gardner* ---- 16
Johnston, Dr. J. G.: Cataract Accidents ---- 254
Kidney With Inferior Renal Artery, Complete Ossification of Stylo-Hyoid Ligament, Thoracic and Abdominal Transposition—*Dr. G. Alfred Aiken* ---- 126
Kidney With Inferior Renal Artery, Complete Ossification of Stylo-Hyoid Ligament, Thoracic and Abdominal Transposition: Discussion by
Dr. J. M. Parrott ---- 129
Dr. G. Alfred Aiken ---- 129
Kinyoun, Maj. J. J. ---- 112, 348
Knox, Dr. A. W.: Robert Lee Payne ---- 356
Knox, Dr. A. W. ---- 296
Kornegay, Dr. L. W.: Carrel-Dakin Solution and Paraffin Dressings in Certain Conditions ---- 137
Lafferty, Dr. Robert H.: The Value of the X-Ray in Diagnosing Gastro-Intestinal Disorders ---- 106
Lafferty, Dr. R. H. ---- 33, 69
Laughinghouse, Maj. Charles O'H. ---- 294
Lee, Captain Walter E.: The Treatment of Infection and Infected Wounds With the Chlorine Antiseptics ---- 311
License Granted by Examination ---- 385
License Granted by Reciprocity ---- 385
Lilly, Dr. J. M. ---- 250, 257
Long, Major John Wesley: Traumatic Brain Surgery ---- 190
Long, Major John Wesley ---- 144, 261, 263, 276, 280, 281, 283, 288

PAGE

McBrayer, Dr. L. B.: Announcement by the Chairman of the Committee of Arrangements ---- 24
McBrayer, Dr. L. B.: Presentation of Service Flag ---- 262
McBrayer, Dr. L. B.: An Apostrophe to Dr. J. L. Nicholson ---- 368
McBrayer, Dr. L. B. ---- 1, 7, 8, 10, 13, 15, 16, 321, 325, 326, 328, 332, 363, 366
McCain, Dr. P. P.: The Incidence and the Importance of Pleurisy in Early Tuberculosis ---- 80
McCain, Dr. P. P. ---- 83
McCracken, Dr. J. R. ---- 115
McCrae, Dr. Thomas: The Medical Side of a Military Base Hospital ---- 305
McMullan, Dr. Oscar, Sketch of Life of—*Captain Thomas S. McMullan* ---- 369
McMullan, Dr. Thomas S.: Oscar McMullan ---- 369
Macon, Dr. G. H.: The Midwife Problem ---- 216
Macon, Dr. G. H. ---- 327
Malaria Fever: The Effects of its Toxins Upon the Kidneys—*Dr. C. F. Strosnider* ---- 70
Malaria Fever: The Effects of its Toxins Upon the Kidneys: Discussion by
Dr. E. J. Wood ---- 75
Dr. C. F. Strosnider ---- 76
Medical Examiners, Report of the Board of ---- 380
Medical Side of a Military Base Hospital, The—*Dr. Thomas McCrae* ---- 305
Members, Alphabetical List of ---- 386
Members, List of for 1918 by Counties ---- 397
Members of Optional Selective Draft of North Carolina Medical Profession Appointed ---- 282
Memorial Exercises ---- 354
Midwife Problem, The—*Dr. G. H. Macon* ---- 216
Midwife Problem, The: Discussion by
Dr. H. A. Royster ---- 219
Dr. E. J. Wood ---- 220
Dr. J. E. S. Davidson ---- 220
Dr. Cyrus Thompson ---- 220
Dr. J. W. Halford ---- 221
Mine Host—*Mr. Leonard Tufts* ---- 7
Minutes of the Society ---- 3
Miscellaneous Matters ---- 334
Munroe, Dr. J. P. ---- 24, 279, 281, 283
Newman, Dr. Harold H.: The Clinical Relation of Systolic and Diastolic Blood Pressure in the Diagnosis of Certain Acute Circulatory Conditions 84
Newman, Dr. Harold H.: Vaccines and Antitoxins ---- 227
Nicholson, Dr. James Lloyd, Sketch of Life of—*Dr. Cyrus Thompson* ---- 360
Nicholson, Dr. James Lloyd, Sketch of Life of—*Dr. Edward J. Wood* ---- 363
Nicholson, Dr. James Lloyd, Sketch of Life of—*Dr. Benj. K. Hays* ---- 367
Nicholson, Dr. James Lloyd, An Apostrophe to—*Dr. L. B. McBrayer* ---- 368
Noble, Brigadier General Robert E.: Relation of the Medical Profession to the Army ---- 289
Nominations, Report of Committee on ---- 333
North Carolina Doctors With the Colors ---- 267

PAGE
On the Surgical Aspects of Toxic Goiter—*Dr. N. D. Bitting* 167
Opening Exercises of the Society 7
Owen, Col. W. O.: War Surgery 205
Owen, Col. W. O.: The Owen Bill Explained 277
Owen Bill Explained, The—*Col. W. O. Owen* 277
Owen, Col. W. O. 279, 282
Page, Hon. Robert N.: Welcome on Behalf of the Sandhill Section 11
Parrott, Dr. J. M. 129, 133, 140, 144, 147, 156
Payne, Dr. Robert Lee, Sketch of Life of—*Dr. A. W. Knox* 356
Peeler, Dr. C. N.: Adenoids in Children: A Review of the Lymphatic Circulation of the Pharyngeal Region 250
Pittman, Dr. R. L.: Some of the More Important Bone Diseases as Demonstrated by the X-Ray 130
Present Medical Conditions in North Carolina—*Dr. H. D. Stewart* 91
Present Medical Conditions in North Carolina: Discussion by
Dr. Romulus Armfield 99
Presentation of Service Flag—*Dr. L. B. McBrayer* 262
President's Annual Address—*Dr. I. W. Faison* 17
President's Annual Address Referred to Committee 24
Pressly, Dr. George William: Secondary Operations in the Abdomen 172
Pressly, Dr. G. W. 133
Preventive Treatment of Pellagra, The—*Dr. Joseph Goldberger* 109
Preventive Treatment of Pellagra, The: Discussion by
Dr. E. J. Wood 111
Maj. J. J. Kinyoun 112
Dr. P. R. Hardee 114
Dr. G. T. Sikes 114
Dr. J. R. McCracken 115
Dr. H. D. Stewart 115
Proceedings of the House of Delegates 317
Protecting Physicians in the Administration of Public Health Laws—*Dr. A. M. Crouch* 116
Rankin, Dr. W. S.: Annual Report of the Secretary of the State Board of Health 338
Rankin, Dr. W. S. 283, 287
Recent Advances in the Field of Neurological Surgery, and Especially the Diagnosis and Treatment of Brain Injuries—*Dr. William Sharpe* 175
Register, Dr. F. M.: What I Have Been Instrumental in Accomplishing in Eight Months as a Whole-time Health Officer 124
Relation of the Medical Profession to the Army—*Brigadier General Robert E. Noble* 289
Report of an Interesting Case of Exophthalmic Goiter—*Dr. Foy Roberson* 170
Report of Committees:
Auditing 324
Examining Board Committee 323
On Nominations 333
Report of Councilor of Seventh District 332
Report of Hospital Association 322
Report of the Board of Medical Examiners of the State of North Carolina 380

PAGE
Report of Treasurer 318
Requirements for Entrance to Examination for Medical License 380
Requirements for Reciprocity 381
Resolutions Introduced by:
Dr. H. A. Royster 276
Maj. John W. Long 281
Dr. J. P. Munroe 281
Dr. E. J. Wood 287
Dr. Cyrus Thompson 353
Dr. A. W. Knox 360
Response to Address of Welcome—*Dr. F. R. Harris* 14
Roberson, Dr. Foy: Report of an Interesting Case of Exophthalmic Goiter 170
Root, Dr. Aldert Smedes: Diseases That Can With Assurance be Referred to Absence of, or Derangement of Function of, the Ductless Glands 29
Rose, Dr. Augustus S., Sketch of Life of—*Dr. J. F. Highsmith* 373
Ross, Dr. Otho B.: Anesthetics in Obstetrics 221
Royster, Dr. Hubert A.: The Significance of the Sigmoid Adhesion 162
Royster, Dr. H. A. 219, 276
Sadelson, Dr. G. H.: The Use of Solidified Carbon Dioxide in the Removal of Benign and Malignant Growths of the Skin 231
Scientific Papers 27
Secondary Operations in the Abdomen—*Dr. George William Pressly* 172
Secretary State Board of Health, Annual Report of 338
Sharpe, Dr. William: Recent Advances in the Field of Neurological Surgery, and Especially the Diagnosis and Treatment of Brain Injuries 175
Sevier, Dr. Dan. E. 327, 329
Sherrill, Dr. W. H.: The Therapeutic Value of Rest in the Management of Tuberculosis Patients 235
Shore, Dr. C. A. 347
Sidbury, Dr. J. Buren: Congenital Syphilis 40
Sidbury, Dr. J. Buren 38, 57, 161
Significance of the Sigmoid Adhesion, The—*Dr. Hubert A. Royster* 162
Significance of the Sigmoid Adhesion, The: Discussion by
Dr. J. W. Tankersley 166
Dr. L. S. Booker 166
Sikes, Dr. G. T. 114, 331
Some of the More Important Bone Diseases as Demonstrated by the X-Ray—*Dr. R. L. Pittman* 130
Some of the More Important Bone Diseases as Demonstrated by the X-Ray: Discussion by
Dr. G. W. Pressly 133
Dr. R. L. Gibbon 133
Dr. J. M. Parrott 133
Some Phases of Medicine in the Past, Present and Future—*Dr. F. E. Asbury* 100
Special War Session 261
State Committee of National Defense 273
Stewart, Dr. H. D.: Present Medical Conditions in North Carolina 91
Stewart, Dr. H. D. 34, 38, 56, 115

PAGE

Strosnider, Dr. C. F.: Malaria Fever: The Effects of its Toxins upon the Kidneys ---- 70
Strosnider, Dr. C. F. ---- 68
Subtotal Hysterectomy: Indications and Technique—*Dr. L. S. Booker* ---- 156
Sudden Death in Infancy—*Dr. L. W. Elias* ---- 35
Sudden Death in Infancy: Discussion by
Dr. A. McNiel Blair ---- 38, 40
Dr. T. E. Anderson ---- 38
Dr. H. D. Stewart ---- 38
Dr. E. J. Wood ---- 38
Dr. J. Buren Sidbury ---- 38
Tankersley, Dr. J. W. ---- 166
Therapeutic Value of Rest in the Management of Tuberculosis Patients, The—*Dr. W. H. Sherrill* ---- 235
Thomas, Dr. George G.: Address of Presentation of Portrait of Dr. Henry T. Bahnson ---- 376
Thompson, Dr. Cyrus: Volunteer Medical Reserve Corps ---- 283
Thompson, Dr. Cyrus, Letter of ---- 323
Thompson, Dr. Cyrus: James Lloyd Nicholson ---- 360
Thompson, Dr. Cyrus ---- 79, 220, 266, 334, 336, 351
Transactions of the State Medical Society ---- 7
Traumatic Brain Surgery—*Dr. John Wesley Long* ---- 190
Treasurer, Report of ---- 318
Treatment of Infection and Infected Wounds With the Chlorine Antiseptics, The—*Captain Walter E. Lee* ---- 311
Tufts, Mr. Leonard: Mine Host ---- 7
Typhlitis Appendicitis; With Report of Some Interesting Cases—*Dr. J. W. Wallace* ---- 147
Typhlitis Appendicitis; With Report of Some Interesting Cases: Discussion by
Dr. J. W. Long ---- 155
Dr. G. Alfred Aiken ---- 156
Dr. J. W. Wallace ---- 156
Use of Solidified Carbon Dioxide in the Removal of Benign and Malignant Growths of the Skin, The—*Dr. G. H. Sadelson* ---- 231
Vaccines and Antitoxins—*Dr. Harold H. Newman* ---- 227
Vaccines and Antitoxins: Discussion by
Dr. E. J. Wood ---- 231
Value of the X-Ray in Diagnosing Gastro-Intestinal Disorders, The—*Dr. Robert H. Lafferty* ---- 106
Volunteer Medical Reserve Corps—*Dr. Cyrus Thompson* ---- 283
Wallace, Dr. J. W.: Typhlitis Appendicitis; With Report of Some Interesting Cases ---- 147
Wallace, Dr. J. W. ---- 156, 161
War Surgery—*Col. W. O. Owen* ---- 205
Warren, Dr. A. J.—Amebic Dysentery ---- 76
Warren, Dr. A. J. ---- 79
Washburn, Dr. B. E. ---- 68
Way, Major J. Howell ---- 263, 338, 348, 349, 353

PAGE
Welcome on Behalf of the Sandhill Section—*Hon. Robert N. Page* 11
West, Dr. T. M.: Development of Pathology as a Science 133
What I Have Been Instrumental in Accomplishing in Eight Months as a Whole-time Health Officer—*Dr. F. M. Register* 124
What Public Health Owes the Infant—*Dr. L. W. Elias* 119
Wood, Dr. Edward J.: The Existence of Tropical Sprue in North Carolina 63
Wood, Dr. Edward J.: James L. Nicholson 363
Wood, Dr. Edward J. 34, 38, 55, 57, 70, 111, 220, 231, 287, 375
Wright, Dr. J. B.: Esophageal Stricture 245

HEALTH OFFICERS' ASSOCIATION

TRANSACTIONS

OF THE

NORTH CAROLINA HEALTH OFFICERS ASSOCIATION

EIGHTH ANNUAL SESSION

Dr. D. C. Absher, Henderson: The eighth annual session of the North Carolina Health Officers Association will now please come to order. We will open with prayer by Dr. Jordan.

INVOCATION

T. M. Jordan, M.D., Raleigh

Almighty and most merciful Father, we thank Thee that Thou hast permitted us to again assemble ourselves together in this, the eighth annual session of the North Carolina Health Officers Association. We pray for guidance in all that we may do. We ask Thy blessings upon us all, collectively and individually. We thank Thee for the blessings that we have received from time to time and pray that they may continue.

All of which we ask in Christ's name. Amen.

Dr. D. C. Absher: In making up the program for this meeting our Secretary has left off the usual preliminaries. Usually we have an address of welcome and a response to the address of welcome, and so forth, which takes up quite a bit of time, and being in the military service of the country I have not had an opportunity to prepare a paper which will take up very much time myself. Consequently, I am afraid that our session this morning, instead of being late, will have time on its hands.

The next number on the program, however, is the President's Annual Address, and I will read it.

PUBLIC HEALTH AND THE WAR

Annual Address by D. C. Absher, M.D., President North Carolina Health Officers Association

One year ago when this association met in the city of Asheville we did not dream that the year which has just passed would be so full of epochal events in the history of our country as it has been. It has been a period in the history of the world to which all future ages will look back with wonder and awe. Many millions will look back to this time with sadness, and yet pride, in the memory of the loved ones who have sacrificed their lives for the cause of freedom; for the cause which is dear to every American heart; for the cause which the arch-enemy of civilization is now attempting to trample under foot. At this time, with enemies abroad and enemies within our own borders, it behooves all true Americans to stand shoulder to shoulder, to give firm and loyal support to our great President, and to work and pray for the success of our brave boys on the fields of France.

One year ago when this association did me the honor of electing me its president, I did not dream what the year had in store for me. As some of you know, I had hardly more than returned to my home in Henderson from our last annual meeting, when I accepted a position with the International Health Board which took me to the State of Arkansas, and I had been there only a few months when I was ordered into the service of my country. Since entering the service I have been on duty in camps in Georgia, Texas and now in good old North Carolina. Having thus been out of the State during the greater part of the past year, I am more or less out of touch with the work which the health officers of North Carolina have been doing during the year, and I am at a loss to know just what I should discuss. But first of all I must thank you for the honor which you have conferred upon me, no honor which the future may hold can be more deeply appreciated. I am delighted that my orders have been such as to allow me the pleasure and privilege of attending this meeting, and I am sure that we are all glad that we have this delightful place among the sand hills and pines in which to meet. I have stood upon the topmost peaks of many of the highest mountains in our beautiful Western North Carolina, but I have never seen a more extensive and inspiring view than that which spreads out before the eye, in every direction, from the top of the big Sandhill upon which is located our splendid State Sanatorium, and which we shall have the opportunity of visiting while here.

It has been suggested that some explanation of army methods of sani-

tation and disease prevention would be of interest to you. I shall therefore say something about our work in the army, though not in an exhaustive way, nor will I go very deeply into details.

In many respects disease preventive work in the army is similar to that done in civil life, in other respects it differs radically. A knowledge of the fundamental laws of health and disease is, of course the first essential for doing public health work anywhere. The next most important qualification is tact, and it is just as valuable in the army as it is in civil life. If I were to attempt to give advice to health officers anywhere, I would impress upon them the great and vital need for tact. In fact, public health work consists, largely, in the tactful teaching of public health truths. Teaching the truth tactfully—and the truth is enough, it isn't necessary to stretch it—will get you further than bluff ever can; but tact plus backbone means that one must have the courage to use force where force is necessary. The tactful man seldom has to use force, for he is able to make people see good health as something to be desired, as something for which it is worth while to put forth effort and to spend money in order that it may be retained.

Sanitation in the army is carried on according to military custom. Inspections are made by those having authority to make them, and whenever errors are found it is often possible, with a little instruction to get the error corrected immediately and without further procedure; on the other hand we sometimes find that kindly advice and instruction is not properly received, and it is then that tact must be accompanied by backbone. There are regular military channels through which such corrections are brought about, and which it is not necessary to discuss here. The inspections are daily, and when they are made attention is given to such matters as the cleanliness and ventilation of barracks and tents; the arrangement and number of cots in the tents; the cleanliness of kitchens, mess halls, and table utensils; the manner in which food is handled and protected from contamination, and whether it is handled by healthy men or not. The amount of left-over food and its disposal is carefully watched. Picket lines and latrines are inspected daily in order to be sure that they are kept so that flies may not breed in the one nor gain access to the other. The breeding of mosquitoes is prevented by constant attention to drainage, the filling of holes and oiling of such places as cannot be drained or filled, and the importance of flattening or punching holes in tin cans is not lost sight of.

In the matter of infectious diseases, notification is prompt in every case. Isolation of patient and contacts is even more prompt, so that no patient is allowed to become a menace to the public either within or without the army.

Great care is taken to discover all carriers by bacteriological methods and whenever one is found he is isolated until free from infection. Prompt reports of all communicable diseases are made to the Surgeon General's office, and the frequent reports from that office is proof that the public is kept fully informed as to health conditions in the army. This is quite a contrast to the old way of handling infectious diseases in civil life, and even now there are health officers who carry out the old fogy ideas of some of the laity in that they keep from the public information of the presence in their midst of infectious disease through fear that such information "might hurt business" or "might hurt the reputation of the town." I fear that there are still a great many private practitioners who conceal the cases of their favorites, but I am glad to say that health officers who do that are growing few and far between. Enlightened public opinion is no longer satisfied with the concealment of disease.

Let disease, if it is one that is preventable, come out in the open—give it publicity—and soon it will meet such a defeat as we hope the kaiser will receive in the near future.

Publicity of the right sort never hurts, and in civil health work it is of the greatest importance that the public be kept informed of the health officer's activities, of the presence and location of communicable disease, and that the people be educated through the public press as to the means of preventing disease. The words of the beloved Charles B. Aycock still ring true, and they apply to public health as much as to anything else—*Educate!* EDUCATE! EDUCATE!

The disposal of human excrement is a question which has been discussed ever since the days of Moses. In recent years we have learned that we have been more crude in our methods than were the people in the days of the patriarch, for we learn by reference to scripture that the laws handed down to the people of that day required them to dig and cover that which came from them. Three or four years ago when the fly-tight pit privy was advocated as a method of improving the old open surface closet, which was usually in vogue where there was a privy of any sort, great discussions were started and have continued ever since. The pit closet has never been advocated as the one perfect method of improving privies, but that it is an improvement is certain. It is not devoid of dangers—no privy is—but where a reasonable amount of attention is given to location, construction and maintenance, it is a safe privy. In the army I have seen these closets installed in many kinds of soil in several states and I have yet to see where any harm has come from their use.

The French are said to be expert in the use of camouflage, but I have

come to believe that they are not the only experts. We are developing many of them right here in our own country. In fact a great many of our own people have been experts for a long time without knowing it. Recently I have heard of some concerns who are commercializing our public health teaching by going out among the people and selling septic tanks. They call them septic tanks, but those put out by some of these concerns are pure camouflage, that is they look like septic tanks but they are not. I just mention this in passing in order that you may have your eyes open, and if you don't know what a septic tank is, find out, and protect the health and pocketbooks of your people against this commercial camouflage, remembering that the name "septic tank" means nothing, and that sewage treatment should be studied and the method adopted should be one which will fit each particular case.

Vaccination against typhoid is rapidly reducing the prevalence of that disease, but we still have the dysenteries and the various intestinal parasites with us, so that we cannot yet cease our efforts toward better methods of sewage disposal. Even if there were no danger from disease, esthetic reasons should lead us to put human feces where it cannot contaminate our water supply and where flies cannot gain access to it.

Returning to our discussion of army methods, the first thing a recruit gets, after being accepted, is his vaccination. He is immunized against typhoid and para-typhoid with the army triple-typhoid vaccine, which is administered in three doses, with intervals of ten days between doses. As the name indicates this vaccine contains the killed bacteria of typhoid, and types A and B of para-typhoid. Experience has shown that the reaction following the injection of this triple vaccine is very little, if any, more severe than that following the use of typhoid vaccine alone; and it is obvious that protection against three fevers, with no more inconvenience than would be experienced with inoculation against one, is something to be desired.

Each recruit is vaccinated against smallpox at the same time he receives his first dose of triple-typhoid. The reason for this is the simple fact that it requires three to five days for the smallpox vaccination to take, by which time the reaction from the first dose of typhoid vaccine is over.

At the present time we have more men in uniform than ever before in the history of the country, and there are perhaps more people immunized against smallpox and typhoid than ever before in this country. The fact that all these hundreds of thousands of men have been vaccinated with very little inconvenience to themselves ought to be a very strong argument in the hands of health officers in getting the folks back home protected against these dreaded diseases.

Strenuous efforts are being made to eliminate the physically and mentally unfit from our fighting forces. The reason for this is plain, for we can readily see that only the physically and mentally fit can hope to stand the strain at the battle front. We must not, therefore, encumber our forces with useless men to be transported and fed, for just now our one first aim must be to win the war. But, with the elimination of so many defectives, especially mental defectives, and the sending to the front of the very best of our young manhood, one is led to wonder what type the future American will be, and to question if the day has arrived when the sterilization of criminals and mental defectives should be practiced. These stray thoughts bring to mind the great problem of the control of venereal disease, and I divulge no secret when I tell you that venereal diseases, contrary to public opinion, are being more effectively controlled in the army than in civil life. This is proven by the fact that there is a much higher sick rate from venereal diseases among new recruits than there is among those who have been enlisted for several months. This evidence points to the effectiveness of army methods of control; but in spite of that, the records show that the sick rate per thousand for all troops in the United States for the past several weeks, has been higher for venereal disease than for all other acute infectious diseases combined. Now, if with army control, where the method used is more effective than any yet devised, we can only obtain the result mentioned, there is evidently a great field in civil life which is ripe for the harvest; and with the exception of tuberculosis there is perhaps no other class of diseases so important from a public health standpoint.

During the past winter there have been a great many cases of measles in the cantonments. Many of these cases were followed or accompanied by pneumonia, and quite naturally some deaths resulted, as would have happened with the same disease anywhere else; but with all that, I often wonder if the great mass of our people have yet awakened to the fact that measles is not a harmless disease, and that it should be reported and quarantined always.

We have also had a number of cases of meningitis, and no doubt the reports which have reached the public have been very alarming, but as a matter of fact the number of cases has been comparatively small; and the mortality, thanks to Flexner's discovery, has been only about 30 per cent of those attacked by the disease. Some of the cases were due to the streptococcus, or infections other than the meningococcus. In these nonepidemic cases the mortality was much higher, the rate being 75 per cent at Camp Greene. The total number of cases of epidemic meningitis occurring at Camp Greene to date is thirty-three, the number of nonepidemic cases to date (March 26) is four.

Meningitis is a disease which results from over crowding. The germ does not thrive in the open and outside the body it survives only a very short time.

When a case of meningitis occurs in a camp, the patient is immediately sent to the base hospital where he is isolated. All those who have been in immediate contact with the patient are sent at once to the detention camp where they are isolated until it is certain they will not develop the disease and that they are not carriers; frequent microscopic examinations of smears from nose and throat being made to determine this point. Smears are also taken from the noses and throats of all the other men in the company in which the case developed. Carriers are frequently found among the apparently healthy. When a carrier is found he also is isolated until repeated examinations show that he is free from the germs.

As far as possible, this procedure is carried out with all other infectious diseases.

Pneumonia along with the other respiratory diseases has been prevalent in the camps, and quite a bit of work has been done along the lines of serum therapy and there are hopeful signs as to future prevention by vaccination—but that will be an interesting story for the discoverers to tell us in the future.

The enforcement of the law which requires communicable diseases to be reported and properly isolated is one of the most unpleasant tasks that a health officer has to perform, at the same time it is one of the most important. The first requisite for the control of any communicable disease is a report of every case. Military regulations are such that we have little trouble in getting the cases reported in the army. In civil life, however, it was my experience that doctors had to be constantly reminded of their duty, and there were times when patience ceased to be a virtue and tact had to be accompanied by backbone—sometimes in the form of legal proceedings.

I do not know how many counties are giving special attention to the reporting and control of tuberculosis, but I am sure that there is not a more important field in the realm of preventive medicine. Tuberculosis offers a problem to a county health officer which should delight him with the prospects of work and accomplishment. It is one of the most deadly and most dreaded of diseases, yet it is easy to prevent and easy to cure if managed with intelligence. What a field it is for work, and what wonderful results are possible of accomplishment!

Just here I cannot refrain from referring to the magnificent work which is being done by every department of our State Board of Health, and especially our State Sanatorium and its extension service, and I

take this opportunity to urge that every health officer give Dr. McBrayer the closest coöperation in his untiring efforts against "the great white plague."

I have for several years believed that the full-time county health officer plan would be the means by which all public health work will ultimately be accomplished. I am as thoroughly convinced of that now as ever; but I am also convinced that, before the plan is thoroughly established and thoroughly successful new laws will have to be adopted. The needed legislation should be such as would prevent doing away with the work at the whim of some person of power or influence; in other words, the office should be made just as permanent as the sheriff's or any other office. The incumbent should be required to possess certain qualifications and he should be selected by a non-political board and required to work in harmony with the State Board of Health. Furthermore such health officers should be paid a living wage. Counties do not expect sheriffs, clerks of court, treasurers, etc., to serve at one-fourth pay and then go out and earn their living doing other things; then why should they expect health officers to do it? A capable full-time health officer is, as a rule, and must be a much better educated man than any of those mentioned; his work for the prevention of disease and prolongation of life is far more important, then why should he not be entitled to a living wage, and why should he not be assured a reasonable tenure of office?

Dr. Hastings, in a recent number of the Toronto *Bulletin*, says that "in the various nations engaged in this war, in times of peace, over 6,500,000 die annually of preventable diseases, and that there have been fewer than 7,000,000 killed in action on all sides since the outbreak of war. Obviously, then all the battles in the interest of humanity and the interests of nations are not fought in the firing line." The *Ohio Health Journal* says that "Prof. Irving Fisher has estimated the United States loses each year over a billion dollars on preventable or postponable deaths, another half-billion on doctors' fees, medicine and nursing for needless illness, and still another half-billion on time and wages lost because of such illness. In other words, development of public health work to the point where the ideal result of wiping out all preventable disease and deaths could be achieved, would in one year produce a saving that would pay off the first liberty loan. War-time is above all other times, the time when our efforts in preserving the health of the people should be pushed to the fullest extent. It is the patriotic duty of every government—local, State or National—to provide every dollar possible for this cause."

In conclusion, let me remind you that we are at war, and every true

American wants to win and is willing to help win. If we win, we must not only conserve food, fuel, and the thousand and one other things which we may be called upon to conserve before it is over, but we must conserve the health of our people, and nobody is in a position to do more to win the war than you men who are doing your bit at home for the improvement of the race.

Dr. D. C. Absher: We will have the report of the Secretary and Treasurer.

Dr. G. M. Cooper: My report is short this morning. If there were any way in the world the Secretary of an association could express the cumulative burdens for one year's work we would not have time for anything else, even the Secretary of a small and compact association like this.

I want to say a word here, perhaps out of order. This is the eighth annual meeting of this association and we have never opened under more favorable auspices, and some of the men have come more than two hundred miles, some have driven fifty miles across the country last night in time to get here for the meeting this morning; and I think a loyalty like this is a tribute to the healthy condition of this association. and with the possible exception of one or two men, the men who are doing health work in North Carolina are here, all of them, and if there was ever a time for efficient effort in health work I think that time is now, and I think you gentlemen agree with me by coming here and showing an interest in this meeting.

Just a word by way of explanation in regard to the program. Thanks are due to Dr. Hays and the State Medical Society for their courtesy in printing our program. Of course, every man in the Health Officers Association is a member in good standing of the State Medical Society and we judge all of us pay our annual dues. In that way, of course, the State Medical Society is justified because every man is a loyal member. In regard to this program this is what you might call a home-made program. Dr. Absher is in the army service and was too busy to help in its preparation and the other men whom I might have consulted were too busy so there was nothing for me to do but do the best I could in making the program. You will note that the program is not full, that there is plenty of time left for free discussion. There was some criticism at Asheville last year of the fact that the members of the State Board of Health and the whole-time health officers were a little too conspicuous by their presence on the program. This year—I take full responsibility—I have swung to the other extreme, not that we mind

criticism because most men in health work could not sleep without criticism, but I think it is best to have a program in which every man interested in health work is vitally interested.

I am much obliged to every man for coming up according to the program.

REPORT OF SECRETARY-TREASURER.

G. M. Cooper, M.D., Raleigh

The minutes of the meeting at Asheville one year ago may be found in the transactions of the State Medical Society. For this and many other courtesies I wish to thank the Society and its Secretary, Dr. Benjamin K. Hays. I also wish to express my grateful appreciation to Mr. Leonard Tufts and Dr. L. B. McBrayer and their associates for their painstaking arrangements for our meeting. Thanks are also due Mr. Warren H. Booker and the press service of the State Board of Health for public notice in calling attention to this meeting. I also feel under many obligations to the gentlemen who have so kindly agreed to present papers and help in the discussions.

I have prepared and mailed out 262 letters to health officers and county commissioners relative to getting a full attendance this time.

As Treasurer, I have expended for

Postage	$ 7.86
Multigraphing	19.24
Total	$27.10

The above, including stationery, has been paid by the State Board of Health, and is justified because of the assistance of the Association in the dissemination of health education and the prevention of disease.

Balance on hand at close of Asheville meeting	$23.46
Interest on deposit to April 10, 1918	.93
Total on hand	$24.39

The President announced the following committees:

Auditing Committee—Dr. E. F. Long, Dr. K. E. Miller, Dr. J. R. McCracken.

Committee on Resolutions—Dr. B. E. Washburn, Dr. Benj. K. Hays, Dr. C. M. Walters.

Dr. D. C. Absher: There will be no Nominating Committee this year as you remember we adopted the rule that nominations should be

from the floor, and our nominations will be made this year in the same way.

In giving the names of the committees on Auditing and Resolutions I find I had Dr. Long's name on both committees, so I will substitute the name of Dr. Washburn on the Committee on Resolutions.

Dr. K. E. Miller: I think I can say truthfully that I have never been in a more inspiring congregation than we have here today, because this is the only organization of its kind that I know of in the country. I do not know of any State or section of the country that is ambitious enough to try to get together its local health officers in a meeting of this kind, I count it a special privilege, therefore, to be one of you, and I am one of you because, as you probably know, I have been in the State of North Carolina about a year conducting some work in Edgecombe County.

DEVELOPMENT OF COUNTY HEALTH WORK

K. E. Miller, M.D., U. S. P. H. Service, Tarboro

There are roughly about 3,000 counties in the United States. Among this number may be found widely differing varieties—large and small, rich and poor, densely populated and sparsely populated, high and low, hot and cold, agricultural and industrial, white and black, foreign and native, and those combining two or more of these general characteristics. It is obvious, therefore, that a discussion of county health work must be somewhat specific, if it is to be intelligible. We are met here as health officers of the State of North Carolina, and although what follows may apply equally well to county health work in general, this discussion will endeavor to adapt itself particularly to conditions at home. And in so doing our objective will be the average county. As to size this county will be about 600 square miles; in population about 30,000, with a notable proportion of negroes; economically prosperous, but not rich; and distinctly rural.

Having indicated the field of operations the first problem to be met with is that of funds. Inasmuch as the whole program hinges upon this factor, it is deserving of special consideration. There is probably not a county to be found anywhere that has any surplus of money over current expenditure, and it is the universal belief of the citizen wherever he lives that he is paying all the taxes he can stand. This impression is neither always true nor always false. There are obviously limits beyond which we are not justified in going as regards expenditures for health protection. If there were any such things as absolute protection of health we might deserve to be more ambitious in our call for funds. But there is no such thing. On the other hand it is believed that there is an optimal point where the degree of protection afforded per dollar of expenditure reaches a fastigium, and that the expenditure represented by this optimal point is within the reach of the average county. It is perhaps as unwise to ask a county to pay too much for health protection as it is to ask too little, but there is a certain minimum below which organized and efficient health work in a county cannot be undertaken. This minimum is found to be not less than $3,000 per year. Can our average county afford this amount of money? We believe that the answer is "Yes, because they can't afford not to spend this money, provided it is invested in the right man." This means an expense of ten cents per capita in our average county. That this is not excessive is shown by the fact that certain purely rural counties are now exceeding that amount and are proud of their investment. Indeed, if the money

that is spent in most counties in the old haphazard way in the absence of an adequate health machine were applied to a businesslike health department, the increase necessary to reach ten cents per capita would be surprisingly small.

Under our present system our only recourse is to direct taxation for county health work, but we hope for the time when State and Federal coöperation in a financial way will supplement county funds to such an extent that all financial obstacles to county health work will be removed.

In attacking the county health problem we must do so with the proper perspective. We must draw a sharp distinction between rural and municipal conditions. In a city of 30,000 the area covered is perhaps ten to fifteen square miles, as compared to 600 in a county of similar population. While disease incidence in the latter is lessened somewhat by less personal contact, the administrative difficulties are multiplied enormously by the area over which the health officer must work. Bad or impassable roads, also, during certain months in the year are important obstacles. In addition rural people are not so accustomed to rules and regulations, and are therefore, harder to control. Furthermore, the rural health officer is lone-handed in the average county, without sanitary inspectors, policemen, and nurses at his beck and call. Therefore rural health administration is in a class by itself. Not long ago, I sat in a symposium on rural health administration, which was positively ludicrous. Not one of those participating showed evidence of even a speaking acquaintance with genuine rural work. Also, while I am not discounting the value of special instruction for health officers given by the medical schools. I wish to say that not one of the courses is conducted from the standpoint of rural needs and conditions. Indeed, I believe, that the average man is rather systematically unfitted for this work by the courses now given, because he is trained from the municipal standpoint only.

Nowhere is the man himself more paramount than in rural health work. In comparison, the personality of the municipal official is insignificant, since he is fortified by a routine system which keeps him more or less behind the scenes.

In order to attempt any effective health work, in a county there are certain minimal requirements which must be provided for, some of these have been alluded to already but will be recapitulated. 1. Funds amounting to at least $3,000 per year. Two thousand of this should be set aside for the salary of the health officer, and the remainder for running expenses.

2. Equipment. (a) Automobile, bought and operated by county money. (b) Stationery and office furniture. (c) By all means an adequate sys-

tem of preserving records. This is one of the weakest points in county health establishments generally. (d) Office help. Under the above budget not much can be invested in this way, but it is very essential to have some one, if only a child, always in the office to answer telephone calls, and to keep the simple, but necessary records. (e) Mimeograph, typewriter and stereopticon.

3. A well trained medical man who has the instinct for work, and the personality and judgment suitable for accomplishing the desired ends. The idea of making health officers out of nonmedical men has gained popularity in some quarters, but in county health work there are many reasons that would make this even more of a mistake than elsewhere. In any case, however, the health officer must be a full-time man.

Starting with the foregoing minimal requirements other facilities may be added, *ad infinitum*. Roughly speaking, a county can get as much health protection as they are able and willing to pay for. But for the average county these minimal requirements are about all that can be expected at first. This being the case, the first plank in the health officer's platform should be that at first, some things must go undone. His first duty should be to find his own limitations, and be prepared cheerfully to sacrifice the less important for the more important, so that his full capacities may be applied at the strategic points. One of the favorite fetishes, for instance, that dies hard is a laboratory. But unless the one-man health officer divorces himself from the idea early, he will waste precious time and good money, providing always that such good services are obtainable from the State laboratory, as we now enjoy. Also many new developments in public health work, more or less of the nature of refinements are very attractive but cannot be actively incorporated into the early stages of rural health work. Among these may be mentioned the venereal problem, prenatal care, eugenics, welfare work of various kinds, and life extension work. Some of the older health establishments, however, seem to have leisure to specialize in these so-called refinements, inasmuch as they claim to have practically eliminated the needs for sanitary work. However, the beginner in rural health work must stick close to earth. As regards contagious diseases he has no choice in the matter. These constitute emergencies and he must therefore attend to them as they arise. In connction with these he finds a duty in the performance of which he must be tireless. This is the training of his people to prompt reporting of diseases. This is indeed a developmental process, requiring time, patience, sometimes the pressure of law, and every atom of the health officer's ingenuity in the bargain. A great many devices may be employed very effectively for the purpose of getting more complete reporting but these cannot be dis-

cussed here due to lack of time. If, however, he accomplishes this task with satisfaction the remainder of contagious disease control is practically automatic. The practice of quarantining by registered mail is looked upon as particularly well adapted to rural needs, but should not be employed as a routine measure.

At least all health establishments in their infancy will find themselves confronted with almost universally dangerous filth disposal systems, or lack of any at all, in every home. No real progress can be made toward control of filth borne diseases, therefore, until the insanitary practices are supplanted by sanitary measures. In a county this may not be done completely until the millenium arrives, but in practice we meet with a most surprising phenomenon. It has been found by the extensive rural sanitation work done by the United States Public Health Service in the past three years that we get better returns from small amounts of sanitary reform than we really deserve. A very notable drop in the typhoid fever rate has invariably followed the rural sanitation campaigns even when the actual numbers of sanitary privies constructed bore but a small percentage to the total. It is fortunate that our labors in this field are so rewarded because it is a sordid and unattractive business in itself, and if the fruits of such work were not unmistakable many health officers might persuade themselves to neglect it. The fact remains, however, that the health officer cannot escape the problem of human filth disposal, and he must plan to devote the major proportion of his energies to it, especially during the summer months.

For the fall and winter months the health officer finds a job which from the standpoint of importance compares favorably with the foregoing. This is the work among the school children, which comprises not only a physical examination of the children, but some system of follow up work.

Two other basic problems, namely, tuberculosis and infant welfare are unfortunately rather beyond the reach of the one-man health officer in a direct way. It is possible and essential for him to stress these subjects in an educational way from every possible angle, but further than this he can hardly venture without the assistance of a nurse.

The foundation of all rural health work, of course, must be education. In the large cities imperialistic methods may be tolerated but not so in county work. It does not, however, come within the province of this article to discuss the various aspects that education work may assume. No method or practice which will accomplish the desired end can be disregarded.

The one idea about which county health work revolves is that of de-

velopment. A full grown health machine will have to be pruned back some before it will take root when planted into virgin soil. But when a healthy stalk is once rooted its branches may be trained to practically any desired form and extent.

Having started with the fundamental problems in rural health work others may be taken on from time to time, but not until either help is added or the elementary objectives get so well in hand that some attention can be diverted from them to new tasks.

A characteristic mistake in trying to develop county health work is to attempt to get results by an overabundance of new rules and laws, calculating perhaps that by allowing a discount of 90 per cent, more will be accomplished with many laws than with few. This practice tends rather to disorganize than to develop health work. Good health legislation should be such that its effects should be its own recommendation. Make no laws except those capable of 90 to 100 per cent effectiveness with the machinery one has at hand. That is to say, a few reasonable laws which a health officer is able to make mean just what they say will inculcate unto the people the habit of observing health laws. These, then, will serve as a nucleus around which other laws may be added in similar fashion. So that the health machine will become a real live creation instead of a grand game of bluff.

When an engineer lays out a drainage system he so executes the plans that the smallest branches bear a definite relation to the main collecting channel. The size and slope of each branch must be such as to harmonize with its fellows, so that orderly function will prevail throughout. In the scheme of health administration we find a close parallel in which the county organization represents the smallest branches or indivisible units, and the State and Federal organizations respectively the larger ones. Each have their own separate functions to perform but neither can successfully operate independently of the others. While this fact is so simple that its statement seems a mere platitude, a glaring disregard of it is sometimes seen. Few states, perhaps, have suffered more mischief from this source than has North Carolina in the years past, and even now to a lesser extent.

But when the turmoil of war subsides we may confidently look for a great impetus to internal development of our country. Unquestionably health matters will receive greater recognition than ever before. We may therefore conceive of the time not far distant when funds may be available for a coöperative health program in which county, state and Federal Government will all share proportionately. Such a scheme would necessarily bring about a close coördination of policy in the different units and wipe out all barriers to interdependent coöperation that may

now exist between them. But whether this plan is ever realized or not, the wise health officer in developing the work of a county will go about his task with the idea that the health forces of our country constitute an organic whole of which the county organization is an inseparable unit, both ministering and being ministered unto.

DISCUSSION

Dr. D. C. Absher: This paper is now open to discussion. It is a subject I am sure every county health officer is interested in—every public health man is interested in. I hope we will have free discussion.

Dr. W. S. Rankin: I want to express my appreciation, and the appreciation of the Board of Health, if I may, for the paper and what the paper represents that you have just heard.

Dr. Miller is a United States Health Officer, loaned to the State of North Carolina, and detailed to Edgecombe County, a county which has all the health problems in which this State is interested, that is including malaria and hookworm. Before Dr. Miller went to Edgecombe County he visited a large number of county health officers, whole time health officers, in this State and other Southern States, and studied their work, and after some two or three months inspection and planning he went to Edgecombe County and started to work. As a result of a year's experience—you have heard the paper just read, which, according to my way of thinking is one of the soundest, most practical papers on county health work that I have ever heard, and which will bear careful comparison with all other papers on that subject.

There is just one thing I want to comment on that Dr. Miller mentioned, and that was particularly gratifying to me in coming from a representative of the United States Public Health Service. The United States has established a precedent of extending their financial assistance to rural communities. Several years ago the United States Government passed a law providing for the construction of public highways. That law appropriated something like five million dollars and was to be increased so much per year until it reached a total of twenty-five million. That sum was to be apportioned to states on a basis of population. The Federal Government later passed another precedent of which I am coming to, which set aside an apportionment on population and a square mile area basis for employing vocational teachers, agricultural demonstrators, both for farmers and for teaching home economics. All those Federal apportionments are not available to a state until a state itself puts up so much money, and then the state can get the Federal

apportionment. I think the state must match the Federal apportionment dollar for dollar, and then that state fund and the Federal fund are combined and are invested in the county that will put up one dollar for two from state and nation. That is a financial participation of the three constitutional units of government: the Federal, the State, the county, in solving problems of common interest. The same thing should be done in providing for health work, because health work is work that concerns not only the county, but the State and the whole country. With thirty-three per cent of the population thrown out for military service at the healthiest age period the advantages of such an arrangement are emphasized. If the United States would make an appropriation on a population and square mile basis, available to counties that match the appropriation, if the Federal Government would put up between $20,000 to $25,000 for North Carolina, one twenty-fifth of what is spent on roads, one-tenth of what they spend on vocational education, then it would not be necessary to argue with the General Assembly to make appropriations for rural sanitation, because they would lose their Federal apportionment if they did not. The State Government would immediately appropriate twenty to twenty-five thousand dollars, which would be combined with the Federal, making a total which the State would have of forty to fifty thousand dollars for rural health work. It is nothing but right that all should participate—should bear the common burden.

There is another interesting principle that comes in here that applies in each of the other precedents that the Federal Government has established. A county determines how many miles of road it wants, how much money it proposes to spend per mile and the material out of which it is going to build its road, carries the plan to the State Government, the State Government puts its O. K. on it, and if the Federal Government's engineers approve it the money is available. The point is the plan has to be approved by all three, and that makes out of the State a clearing house on planning road construction, and it makes out of the Federal Government a still greater clearing house. The same applies to State vocational education, the same should apply to health work. A plan should be submitted to the State, approved, and if the Federal Government approved, the funds therefor would be available. A bill has been drawn, Mr. Lever, Chairman of the Committee on Agriculture of the United States Congress is ready to introduce the bill, which would now be before Congress but for the war. If the health officers really want to lay the basis for county health work, they should see their Congressman and get him interested in arranging for rural sanitation in the way that other matters of interest to Nation, State and county have been cared for.

Let me say, inasmuch as Dr. Stevens's remarks are partly personal, what I have said time and time again in this Association: I sincerely appreciate what Dr. Stevens has said, but I want to say this, and I say it because I mean it, that the direction and the impetus had already started, both the force and the direction, had started when I came into office, and the men who started it and the men who gave it this impetus (a thing that gains momentum every foot it makes), were Dr. Wood and Dr. Lewis. The credit of the men who are working today is nothing as compared to the work done by those men, because they had to work without support. We can look ahead and see results. The total deaths from typhoid fever in 1914 was 839, the next year 734, and last year 626. Well, anybody can be encouraged by that sort of stuff, even the people are encouraging us, but Dr. Lewis could not see a year or two ahead. He had to live by faith, which is a much finer kind of living than by direct observation.

Dr. Benjamin K. Hays: Every great work comes as a result of some man's dream, previous to the coming of the man of action. All honor to Dr. Lewis, all honor to Dr. Wood, but in a hundred years from now, when the history of North Carolina is written up, the name that will stand highest in pioneer work will be that of Dr. Rankin.

Dr. Charles E. Low, Wilmington: I am here from Spartanburg, S. C., to represent Wilmington and New Hanover County, in which city and county I expect to locate as full-time health officer. I was asked to come here by the Joint Board of Health of Wilmington and New Hanover County, and I wish now to acknowledge my appreciation of the courtesy you are extending in allowing me to appear here as their representative.

I want to revert to Dr. Miller's paper, and a thought that occurred to me during the discussion of it by Dr. Rankin. I refer to the question of records, which involves the keeping of accurate vital, morbidity and mortality statistics, as a thing which makes it possible for the health authorities to make an appeal to the people. In other words, public health work has resolved itself, so far as its proved necessity and absolute justification goes, into a system of accurate bookkeeping. The pioneer work as referred to has been done by Dr. Lewis and those early workers, who started this organization. All honor to them; they were workers by faith; they did not have the records that Dr. Rankin now has with which to go before the people and lawmakers in seeking support, the records in figures which show, for instance, that the cases and death rate of typhoid fever has decreased. The best way we can get before the people to ask for appropriations—that is not the way it was

done by Dr. Lewis and his colaborers, who by perseverance and faith accomplished so much for the work—is in showing them that it is a matter of economy to them in dollars and cents, figuring out what the monetary saving has been and would be to the State of North Carolina by the number of lives saved, figure at the low estimate of $5,000 per life, what has been the saving to the State of North Carolina in dollars and cents in the number of lives and amount of illness saved during those years since health work was started and complete records of its results kept. I venture to say one-tenth of the money saved in lives and expense caused by illness; I venture to say one-tenth has not gone back to the Health Department. Now, gentlemen, I practiced medicine for fifteen years as a private physician before I got into public health work, and I want to say candidly to this body of medical men here that, taking the medical profession as a unit, it is a great hindrance to public health work through lack of coöperation. I honestly believe it is true; it is my experience everywhere, and I hope you will take that criticism in the kindly spirit in which I make it. I come to make an appeal to every man engaged in the practice of medicine in this State and especially those from New Hanover County, to realize his obligation to coöperate and to help perfect the records, as it is only through the profession that this can be done. If the reports are not properly made the records cannot be perfectly kept. No matter how good a bookkeeper you have, if you do not get the reports properly they cannot be properly recorded.

The question that Dr. Rankin has spoken to you about, that of national aid, concerns us all. Such aid is coming, and it is coming through the uniform effort of public health workers, with Dr. Rankin as one of the leaders of that effort. I had the pleasure of being in Washington last October at the American Public Health Association, and of hearing Dr. Rankin on the floor of that great clearing house for the exchange of the best ideas in our work. I want to say to this body assembled here, without throwing any bouquet to anybody, what may be news to this assembly, that Dr. Rankin's name was mentioned favorably as President of the American Public Health Association, an honor of no inconsiderable amount. Dr. Rankin is a man of whom North Carolina should be proud, and I trust North Carolina is proud of him. He is a coming man in public health work in the Nation, and needs no introduction here as being a leader in the South. I am not handing this as a bouquet. I am telling what I believe to be a fact.

The way to bring this national aid about is through uniform, organized effort. To do this, get into the American Public Health Association, and I am ashamed to say the South was not numerically well represented at the last meeting. I do not know, Dr. Rankin, how many men

you had from this State, but there were mighty few from South Carolina. Get the men engaged in public health work together in that and similar organizations, and then let them work individually and as organized units to get the appropriations which will make national aid possible. Others are getting what they ask for through organized effort, so why should public health workers not likewise succeed? I want to ask this body to attend the Southeastern Sanitary Association, with the idea in mind of building up a strong organization in this section. That meeting will be held in Knoxville, Tenn., in May. You probably have the notice. Get together, organize, and ask for the help we need. The more we advocate these matters the more support we are going to get.

Dr. K. E. Miller: I think Dr. Rankin's discussion needs no reply except it is rather overdrawn perhaps as regards the personal remarks about me.

Dr. Stevens evidently has gotten a little wrong impression from the remarks I made with regard to coördination. I admit that my remarks on that subject were vague, and I made them so purposely. I did not have any underlying meaning at all regarding the coördination between the Federal and State Government, but I made it vague with regard to coördination between the State of North Carolina and certain of its counties in order to avoid digging up buried bones. The relation which has existed in the past between the county organization and the State Board of Health is generally well known among you, and it is not considered a fit subject for discussion amid the present harmonious conditions.

Dr. Low made reference to records in which he mentioned vital statistics. I am very glad indeed he did, because I would like to have taken the apportunity in my paper to have said something on that subject. Our present system is taken from the model law for state registration of births and deaths. What I am going to say is not with any idea of criticising at all, but I do say that for my part, at least, I have not found it very satisfactory, and I would like very much to see it changed, as regards my own county. Of course, we are all familiar with how it works. Each township has its local registrar and each reports to the State Board of Health. Now, the latest report that is available is that for 1915—that is, without writing to the State Board of Health for information in specific instances. I find myself very much handicapped, because there are many purposes for which one can use the birth and death records aside from putting the facts before the people. In fact, that is the least use I have for them. I find in checking up the reporting of diseases that a knowledge of the deaths from contagious diseases is a

very important thing to have, because, by getting access to these deaths you frequently find incidents where the case, while the patient was living, was not reported. I found one, a case of typhoid fever, last week. I did not get any mortality report at all in the case. Consequently, it furnished me a bit of information by which I could trace up the error. I have made use of these death records in a number of instances just that way. Of course, I do not have access to this through the regular channels, but I make use of a little scheme of my own by which I can get partial reports from the local registrars, at the end of each month. They make these reports if they see fit, but if they do not there is nothing I can do about it. I have been able to get about nine out of fourteen townships reporting fairly well since the first of the year. I pay a small sum for it out of the county funds. A fee of twenty-five cents is paid for a monthly list of the persons dying from communicable diseases. It is a small matter for them to attend to. This is the regular fee for death reports which they make to the State Board of Health. Twenty-five cents per month is probably not much of an incentive, but it shows that we are not beggars. In the same way I have been getting birth reports. The birth reports are very much more important to the health officer than the death reports. The first of this year we put into operation a new law with regard to the control of midwives in the county. In Edgecombe County, for instance, in 1916 we had 904 births, and 636 of that number were attended by midwives. So you see the midwife proposition is very enormous. Consequently it results in a very high death rate, a great deal of them being among mothers, but the infant death rate is especially high. We find in birth registration, in Edgecombe County any number of stillbirths. That is what they are called, but if the babies live two or three days even, they are nevertheless likely to be reported as stillbirths. I am inclined to believe that a great majority of these births regarded as stillbirths are due to negligence and carelessness on the part of these midwives through lack of intelligence. In order to operate this law regarding the control of midwives it is necessary to have a knowledge of the births not two years afterwards, but at the time they occur.

Likewise a knowledge of the births is an absolute essential if any kind of infant welfare work is contemplated. Even without a nurse much can be accomplished by sending appropriate literature to the parents, provided the health officer knows when and where the births occur.

I would urge therefore that where there is a full time health organization in a county, the birth and death reports should be handled through his office rather than by the township registrars.

QUARANTINE

S. A. Stevens, M.D., Monroe

The purpose of this paper is to discuss (1) Quarantine in its general aspects, (2) the practical application of the present quarantine law.

The right of the state to enact laws to promote the physical wellbeing of its citizens I need not argue before this body. Unsanitary surroundings, disease-producing conditions and disease-producing individuals are just as truly a menace and evil to the community as is the thief and the robber. Their methods of working are just as stealthy and lurking as the thief's, and they filch from you something of much more importance than your coat or your pants or your jewelry, namely, your health. You may, and usually can, replace what the thief has taken, but it is often impossible to recover your lost health.

Any one who keeps up with modern medical thought knows that the trend is towards prevention of disease. This tendency finds its most logical and natural expression in the modern quarantine laws. Hence the fundamental or basic ideas underlying quarantine are (1) to foster health, and (2) to prevent disease. Another underlying principle is that it is much easier, cheaper, and more efficacious to deal with the few who are sick than the many who are well. Another fundamental idea of the modern quarantine law is that an individual suffering with a contagious or infectious disease is the most usual and most dangerous source of transmission. The trash heap, the garbage can, the stagnant pool, the burst sewer pipe are eyesores, and for the sake of cleanliness ought to be looked after, but they are not necessarily a source of disease. If no pathogenic germs have been deposited in any of these places, then while they may smell bad and look bad no one can contract scarlet fever, measles, whooping-cough, or tuberculosis from them. Clean up days are all right, and should be encouraged, but the point I make is that too much attention is paid to dirty things and not enough to disease dirty individuals. Fortunately for mankind the majority of disease-producing germs die when expelled from the human body and subjected to sunlight, fresh air and so forth; in other words, the human body is one of the best germ fosterers and germ transmitters that we know. I know that there are other culture media favorable to germs. It is known that the chief sources by which disease-producing germs reach the human body are (a) water, (b) milk, (c) the house fly, (d) food. Granting this, still some infected individual is usually the source of contamination. For these reasons the modern quarantine law says that the best way to prevent the spread of disease is to isolate the infected individual, teach

him how to so take care of himself or rather his various discharges as to minimize the probability of infecting those who must necessarily come in contact with him; instruct those who must come in contact how to protect themselves as much as possible. By continuing the isolation during the known period of infection and by using the proper measures to destroy the germs that perchance were thrown off during the acute stage, the individual and his habitat are no longer sources of danger, and this quarantine stops the disease.

Present Quarantine Law.—The most surprising and gratifying fact in connection with the present law is its favorable acceptance by the people at large. The explanation of this can be attributed first to the excellence of the law, its fairness and reasonableness. Another feature contributing to this is the campaign of education along these lines that has been waged by the State Board of Health in a modest yet efficient way by means of the Health Bulletins, typhoid and hookworm units. In short the minds of the masses have been led to think about health matters and disease prevention, and they have realized that a just quarantine law is for their advantage. To use their own expression, "They don't want any one to bring a contagious disease to their children," and, consequently know that by the same token they ought not to allow their own children to take it to others.

All laws depend upon a favorable public sentiment for their efficient enforcement. I have yet to hear any unfavorable opinion expressed, even by the most ignorant, with reference to this law.

The law on the whole is as free from objectionable features as it can well be made. Another reason for its favorable acceptance has been the most excellent letters for publication furnished to quarantine officers for their county papers by the State Board of Health. These letters have served most admirably to explain, in a simple manner, the essential provisions of the law as they affected the ones in whose homes contagious diseases occur. Another excellent feature of the law is enlisting the aid and coöperation of the teachers. Many cases have been reported by the teachers that would not have been even heard of from other sources. I have been gratified at the number of cases reported by householders. My records show that of the total number of cases reported, over one-half have been reported by householders or teachers.

As to the physicians, I am sorry to say that more interest has been shown in the present law by the people generally than by some of the regular practitioners. I have puzzled my brain no little in trying to explain this indifference, but have not been able to do so thus far. Perhaps some still hold to the old idea that people must have the ordinary diseases, measles, mumps, whooping-cough sooner or later, and that child-

hood is really the best time to have them. This position might be tenable if it were possible to restrict these diseases within certain age limits. It is probable that the chief reasons some physicians fail to report their cases is the habit of putting off, or in other words constitutional negligence. Some physicians no doubt purposely refrain from reporting their cases, hoping to curry favor and make themselves popular with their patrons. Others are just naturally and constitutionally opposed to doing anything that there is no money in, or that puts them to any trouble. One man in my county gave as a reason for not reporting cases the fact that some cards had been sent him without stamps; that he would never report a case if he had to buy a stamp. Of course, that was merely an excuse. He simply is opposed to the law. He was supplied with stamps, and has not reported a case since that time. As to how to reach this class of physicians I am in doubt. As a rule, the only form of persuasion that will accomplish results is force. In short, use the teeth in the law. Let him pay a fine, and let the people know that he is failing to report his cases. By the way, the method of the present law with regards to bringing indictments is very wise and expedient. It helps both to enforce the law and to *secure quarantine officers.*

Finally, allow me to suggest not a change in the present law, but an addition to it—a provision dealing with venereal diseases. I see no reason why venereal diseases should not be reported. Why should the State control other and less harmful infections and make no effort whatever to control these? It certainly has the right to do it, and the necessity for some method of regulation is apparent and admitted by all who are familiar with the situation. There certainly ought to be some way to protect innocent wives and unborn children from the evil consequences of uncured cases of gonorrhea or syphilis. I know a veil of secrecy has surrounded and still surrounds this class of cases, but it is high time that common sense and common justice should rend this veil and at least let in the light of knowledge.

I think that a provision not too radical at first should be incorporated in the law at least requiring physicians to report venereal diseases; a record should be kept. It need not and probably ought not to be published, but it ought to be accessible to a prospective wife or her *bona fide* representative. In short, I think a carefully prepared, conservative law that would serve at least as a beginning for legislation along this line ought to be framed and put into immediate effect.

Dr. W. S. Rankin: I want to move that the courtesies of the floor be extended to Major Kinyoun, of the United States Army, and to Dr. Low, now of Spartanburg, but who shortly becomes health officer of Wilmington.

Dr. D. C. Absher: I am sure we are glad to follow your suggestion.

Dr. T. M. Jordan: I hoped when Dr. Stevens announced the title to his paper that he was going to differentiate between the old and the new quarantine law of our State. (Dr. Stevens: There is no new quarantine law.) Yes, there is a new quarantine law, and the State Health Department has had some of its nicest compliments upon its new law. We have a prevailing idea in our State, however, that our present quarantine law is not an entirely different law from the law of former days. This was impressed upon my mind forcibly some time since when explaining the law to one of the State's prominent physicians he said, "Why is it a new law? I thought you were just notifying us again with the same old law." Our present law will go far toward dispelling the erroneous idea that no one but a doctor can and has any business trying to prevent disease. Now the head of the house becomes his own quarantine officer. You want to emphasize this fact, too, in the enforcement of the present law, for if there is any lesson that North Carolina folks need to learn about preventive disease, it is that it is their business as much as the doctors to take part in the work, yea more.

The present quarantine law deals with the householder and makes him stand sponsor for his own home with the placard, increasing the respect for the placard which was negatived before for the lack of a policeman on guard with the card. The policeman now is the head of the family, and he is himself held responsible for any violations. This law is different both in execution and application from any law we have heretofore had, and the enforcement of it will go further in the education of the people to the fact that they have some part in the work of disease prevention than any other unit of public health work.

Dr. H. Lee Large, Rocky Mount: One of the most interesting features of this paper was the reference to the venereal disease problem.

The realization of the necessity for taking steps toward the control of venereal disease is becoming more general each day, and I believe every one here will agree that a discreet campaign—I use "discreet" advisedly—against venereal disease is a most necessary thing, particularly at this time. I believe, too, that the time is not far distant when venereal diseases will be reportable diseases generally, but in trying to control this class of disease we are confronted with a problem far more complex than that presented by any other of the controllable diseases, because venereal disease is more intimately associated than we can express with the morals and passions of man. This is not true of any other class of disease, and we must not overlook this fact in considering measures for the control of venereal disease.

You can by legislation control the reporting of cases of venereal disease, but you cannot legislate morals into a man, nor can you control the passions of an individual through legislation.

Therefore, I believe that a discreetly conducted campaign of education which would give the lay people an intelligent understanding of these diseases, and the ravages they make in the welfare of the race, together with legislative enactment, in the State of North Carolina and of every state in the Union, that would require the man when he puts his dollar down at the clerk's window for a marriage license, to present a certificate from a reputable laboratory, such as our State Laboratory, showing that he has a negative Wassermann and a negative gonorrheal fixation test, would go further toward the control of venereal disease and its ravages than simply getting the cases reported.

INTERESTING THE PUBLIC IN HEALTH

Benj. K. Hays, M.D., Granville County Health Officer

Success, in the modern business world consists in the application of two general principles: (1) The ability to perceive undeveloped resources of wealth, to lay hold upon that wealth and to convert it into a marketable commodity; and, (2) the ability to advertise.

The first of these two general principles is illustrated by our great "captains of industry" who have perceived in oil, cotton, tobacco and automobiles possibilities which have completely revolutionized commerce, and have made of these individuals multimillionaires. Thus, a lumber merchant rides through a forest, perceives its value in timber, organizes a corporation, buys the land, builds a railway, constructs saw-mills, and in a short time places upon the market a highly valued commodity: an engineer beholds a waterfall, estimates its horse power and converts this power into a live copper wire that turns the machinery of a dozen cities.

The second principle, or the ability to advertise, has been well illustrated in this country by certain politicians, pulpit orators and patent medicine venders, who, by means of the press, the platform and the pulpit have obtained widespread notoriety. They are ever in the public eye. You simply cannot forget them. It does not matter that you are not interested in the commodity which they represent or that you do not endorse their methods of obtaining publicity. They buzz about your ears like flies in summer. You brush them away to gain only a moment's respite from their claim upon your attention. And no matter how much you may despise and condemn them, you are compelled to admit that the methods which they employ spell success.

Permit me yet one other generalization: The two classes to which I refer are composed of people who were dreamers before they were doers. These people are not simply time servers and wage earners. They are not slaves of labor. They are artists who love the game and agonize to excel because of the joy which they find in their work. These people are not materialists who labor for the sole purpose of amassing dollars. They are idealists with lofty visions whose chief joy is to convert their dreams into realities.

Into this period of action and age of achievement there has recently been introduced a new set of workers. It is the army of public health officials. Throughout the past there have ever been a few men who devoted themselves to this work, but recent development in the knowledge of the cause and prevention of sickness has made of "preventive medicine" a new art. The man of today who accepts the position of a county health officer has the glorious privilege of doing pioneer work. He does not garner gleanings, but stands like the discoverer of a rich mine of gold or the owner of a vast forest. No pick has disturbed the soil, no axe has felled a tree. He stands alone with limitless wealth unfolded before his vision. For ages past priests have told the people how to care for their souls. For ages past statesmen have told the people how they should be governed; but no man has yet told the people the laws of health and disease. This priceless message has been committed to you. You stand as one watching children upon a precipice playing at blind man's buff. First here and then there a child tumbles headlong into eternity. Yet, ignorant of their danger, they go right on in their play, while to you it is given to see and to understand. It is said that the early settlers in America found the Indians planting gunpowder, hoping thereby to reap an abundant harvest of this much-desired possession of the white man. In like manner you daily behold your fellow-mortals pinning their faith in matters of health to methods which you know to be the product of ignorance and superstition. And these people are just as certain that their ideas about health are correct as they are that their ideas about government or their ideas about religion are correct. To lead all the people to your way of thinking about health matters would be a task no less difficult than to start a new form of government or to found a new religion. And yet, this is the very task to which we have committed ourselves. How shall we go about it?

It has been said that eighty-five per cent of a health officer's work is educational. Let me change that figure to ninety-nine per cent. The other one per cent is well represented by the health officer who carries out the letter of the law. He reports contagious diseases, placards houses, condemns nuisances, attends the sick in the jail and county home,

draws his salary, and, like the Pharisee that he is, thanks the Lord that he has done all that is required of him.

Now let us consider the other ninety-nine per cent of the work. First, a health officer must become the impersonation of an idea. Like the politician, the evangelist or the patent medicine vendor, he must be associated in the minds of the community with the idea for which he stands. To the politician a given community represents so many votes. To the evangelist that community represents so many souls going to hell. To the patent medicine vender that community represents so many throats to swallow a nostrum, and to the health officer that community should be but so many people who are needlessly dying or languishing upon beds of sickness. Nor should the facts and figures in the case be other than upon his tongue's end. Not from the State Board of Health, or from Washington, should he learn of the number of deaths or of the character and amount of sickness in his county, but rather should the official reports, which are frequently inaccurate, be corrected by him. So much for the knowledge obtained in the field. Yet this knowledge counts for nothing unless the official knows the cause and the cure of the evils which he witnesses. The undertaker knows as well as does the health officer that a given number of deaths have occurred during the year from tuberculosis or that an epidemic of typhoid fever has brought grist to his mill. The practicing physician knows the causes of these diseases, and in a general way the methods of their prevention. But the practicing physician's detailed knowledge is not that of a specialist. The health officer is a specialist, and unless he has burned the midnight oil over Rosenau, and Chapin, read from cover to cover the periodicals bearing upon public health subjects and conned the health bulletins from the states that are really doing things—unless he has done all of this, he cannot hope to be regarded as an authority in his community nor will he burn with that enthusiasm for public health work which is an absolute essential to success.

We now come to the caption of my paper, "Interesting the Public in Health Work." The very first step is to secure a health officer who is himself interested in the work. To his interest must be added an intelligent knowledge of his subject, and what is of even greater importance, a knowledge of the people with whom he has to deal.

A great many counties in the State have secured just such men. In fact, I realize that I am talking to a body of such men. For that reason there is no need for me to dwell upon details. I will simply mention the avenues through which the public may be reached:

1. The county paper.
2. The churches.

3. The women's clubs.
4. Circular letters.
5. Personal letters.
6. The public schools.
7. Individual personal talks.

I have not mentioned the district nurse because where she is found she is active, and where she is not found it is to be hoped that it is not because the health officer has not tried to secure her services.

A word of caution. Do not waste time trying to bring old people to your way of thinking. Direct your efforts to the education of the youth of the land. In addition to frequent health talks before the schools offer prizes to the county school children for compositions on health subjects.

Remember that a southern health officer's most important work is with the negro population. As a people, our greatest menace is the diseased cook and the diseased infant nurse. It is through the cook and the nurse that tuberculosis, syphilis and many other diseases are most frequently spread.

In working with negroes it is highly important to let them know that you are their friend; that you are not a sheriff nor a policeman, and that you are not seeking to reach them through the arm of the law. Let them know that your relation to them is purely advisory, and that you stand to them collectively exactly as does the family physician individually.

It is commonly believed that a health officer who does his duty makes a great many enemies in the community. This is a mistake. Politicians, ministers, lawyers, physicians and editors find it necessary to make certain concessions to public opinion. The health officer also should make these concessions. In the end the man who leads will accomplish more good than the man who undertakes to drive.

DISCUSSION

Dr. K. E. Miller: I want to say in regard to the North Carolina Quarantine Law, that I believe it is the most sensible piece of legislation that has ever been adopted for rural communities, as it is especially suited to rural needs. Inasmuch as North Carolina is a rural section, it is therefore especially valuable. I think that quarantine officers are in the habit of meeting with a certain amount of resentment from the people on account of the posting of a yellow sign on the door. There are a great many people who cannot stand to see a yellow sign on the house. They do not care so much about the isolation; they just have a constitutional dislike for a yellow sign on the front of the house. I think you can always convert those people to the opposite view of the

things just by a little skillful argument. I have been very successful in every attempt of this kind. I put it up to A from the standpoint that the yellow sign is not any stigma or anything that he should be resentful of, but it is the thing he should insist on, because if B, his neighbor, should fancy that he had contracted whooping-cough from A's home, B can in perfect justice condemn A, who does not have a sign to ward him off. But if the sign is on the house, it takes off the responsibility from the home affected, and protects the householder from any criticism. That little trick always produces the desired effect, and I think if it is practiced more generally people will be much more favorably inclined toward the quarantine and much more anxious to see that they do have the quarantine sign on the door.

In regard to Dr. Hays's paper, I was very much interested in what he said about the possibilities of health work among the negroes. The population of Edgecombe County happens to be about two-thirds black, and consequently health work is complicated on that account. I have an average of at least one or two meetings a week in negro schoolhouses. I want to relate an incident in regard to educational efforts which I hope will happen to none of the rest of you. I was at a negro meeting a few nights ago. I showed pictures and explained them, and did my very best to give my colored friends something worth while. This meeting was held in connection with a regular meeting of the negro community organization, after which it is their custom to serve refreshments. When I got through several started out the door, and the negro teacher in charge said, "Please, people, don't leave, for the best is yet to come."

Dr. J. S. Mitchener, Kinston: A dynamic drive for the education of the individual to individual responsibility is the golden road to lowering our morbidity and mortality rate. The physicians may assist in this as the fraternity has done at Kinston. After diagnosis instructing the householder to report is a safeguard against the forgetful doctor. I have had reports from each, the larger the number believing it their duty to report the better the chance. Everybody forgets at times. I am sure I know one health officer that does.

Dr. E. F. Long, Lexington: Several of the speakers have referred to the value of education in health work. It is true that practically all phases of health work must be conducted along educational lines. In order to educate the people we must have the facts.

I want to call attention to a discrepancy in the vital statistics law. We have a fairly prompt and accurate reporting of cases of quarantinable diseases, but no means of knowing when a victim of one of these diseases dies until too late to make announcement of the fact effective.

In announcing the existence of quarantinable diseases, we should be able to announce the results of those diseases.

To illustrate, if a considerable number of cases of measles occurs in a community publicity would be doubly effective if the facts concerning the death rate could be as promptly secured and coupled with the announcement of the number of cases.

I hope that we can soon have some means of making the vital statistics of each county immediately available to its health department.

Dr. D. C. Absher: This closes the program for the morning session, and before we adjourn we have some announcements to make. Before we have that I would like to hear from some of our visitors—Major Kinyoun, Dr. Low, Major Way. (He is not a visitor; he is President of our State Board of Health.) I am sure you will be glad to hear from him.

Maj. J. J. Kinyoun, M. R. C., Raleigh: I feel greatly honored in being allowed the privileges of the floor, and especially at this time and under the circumstances that bring me to Pinehurst.

We have, as you all know, a most serious problem confronting us, a problem which requires for its solution the last ounce of muscle, bone and mind.

In assembling the selective drafted army during the past fall and winter, the Medical Department of the Army was confronted suddenly with some very peculiar problems. Some of these were fraught with serious consequences. This was particularly true with reference to men who were drafted into the service from states where the population was largely rural. Several of the camps to which such men were sent became the centers of morbidity from the contagious diseases, particularly so from measles, meningitis, and pneumonia. The mortality resulting from this condition was, in some cases, alarming. The prevalence of the contagious and infectious diseases among these men proved to be due to the fact that these were among those who came from rural communities and had not been subjected to these diseases in childhood, so therefore it was not infrequent to note that these men had the diseases one after the other and sometimes two at once.

The Surgeon General of the Army has agreed to put in operation a plan by which it is hoped that many of the difficulties and dangers which were experienced during the last winter might be avoided. The plan is this: That officers of the Medical Department are to be detailed to this State for duty in the office of the State Board of Health for the purpose of aiding and assisting this Board in any way whatsoever in ascertaining at the earliest moment the prevalence of contagious and infectious

diseases within the State, and so apprise the division surgeons of the several camps to which the North Carolina boys are sent of the possibilities of their being exposed to these diseases so that the necessary precautions can be taken regarding them, and, further, to prevent the spread of such diseases, if they do appear, to others in the camps.

Another very important provision is that the division surgeons of these camps can be informed from time to time of the existence or the appearance of contagious diseases in any part of the State so that in case a man is furloughed to go home and the sanitary conditions of his home or locality appear to warrant the suspension of the furlough, this can be done.

It is the intention of the War Department to coöperate in the fullest measure with the State Board of Health, and all that is contemplated to be done will be done through the agencies of your health organization.

Dr. D. C. Absher: I will be glad to hear from Major Way.

Maj. Joseph Howell Way: It is a pleasure indeed for me to be here, and I hardly feel like it is necessary to be introduced to North Carolina doctors. If there is any place on earth except in the Army just now that I feel thoroughly at home, it is in an aggregation of North Carolina doctors.

I have enjoyed this morning's session very much; the splendid papers, the interesting discussions, but the one thing that has thrilled me is the blessing, the great, good privilege to be alive, and a part of the working machinery of this great Nation. I feel a continued pleasure in being active and vigorous with the promise of usefulness for many years to come.

I recall when Dr. Thomas F. Wood was struggling and working with a nominal sum. The State Board of Health used to be allowed $100 a year for laying the foundation of public health work in North Carolina. Later I followed interestedly and closely the work of that great and splendid man, Dr. R. H. Lewis, and it was my pleasure to take a hand in putting in office the present splendid executive Secretary of the State Board of Health, Dr. Rankin. Only a few weeks ago it was my privilege to attend a conference of public health workers at Birmingham, Ala., and not even the distinguished Dr. Wm. H. Welch, head of the public health work at Johns Hopkins, outclassed our own Dr. Rankin.

By the way, Mr. Chairman, when you were introducing Major Kinyoun just now you should have said something like this; you should have said that he had simply come back to his own folks; you should have given some of the younger men in this audience just a little of the noble

wreath that splendid man Kinyoun wears. You should have told them that only a few years ago comparatively, when believing as we have that our splendid isolation secured us a practical immunity from bubonic plague, the great ports of this country neglected it, that man from North Carolina went to the public service of the Nation and was stationed on the Pacific Coast. He said, "We have bubonic plague here." The City Commission of San Francisco said, "No," the local board of health said "No," the State Board of Health said "No, it is not possible; with our splendid isolation we cannot have these diseases." The Government of the United States was appealed to, a special commission went out there and took the subject up and studied it in the careful, most laborious but far-reaching way the Federal Government does things of that sort, and the sad but convincing climax of that local situation was reached when a student working in the laboratories of Michigan from specimens from San Francisco developed bubonic plague and died. Then it was known that Kinyoun was the master sanitary mind who discovered they did have bubonic plague in San Francisco, and that man from North Carolina, honored and respected wherever preventive medicine is known, has been sent back to work among his own people. We are glad to have him.

Many other things have been touched on here this morning that I would like to talk about, but I am aware that it has been said by the Captain just now the best part is in store for us, and in the next few days I will, no doubt, have an opportunity to say something, and especially a couple of days hence at the Conjoint Session of the State Medical Society and the State Board of Health.

I extend to you again my heartfelt pleasure at being with you today.

Dr. Charles E. Low, Wilmington: I simply wish to express my extreme appreciation of being here with you, not yet being quite of you, and thank you for the courtesies already extended to me, and apologize for speaking before a formal motion allowing me the privilege of the the floor had been made.

Dr. D. C. Absher: We are glad to have with us this morning the President of our State Medical Society.

Dr. I. W. Faison, Charlotte: I am exceedingly glad to be here this morning, not with any purpose of making a talk, but to listen to what has been said.

I would like to say just one word about Dr. Kinyoun. He had traveled all over the country finding something about antitoxin for diphtheria. It rests with him as being the first man that ever carried a dose

of diphtheria antitoxin into the city of Charlotte. Not that it was ordered, but because he carried it there. Good old lamented, lovable, Dr. McComb had a case of diphtheria and Dr. Kinyoun suggested to him to give this antitoxin that he had with him. It was given, and the result was, as it is now, a cure.

I have listened with much interest to the question of health and quarantine, and as I shall have a little to say about it tomorrow morning, I won't say much about it now, but I want to say the sentiment of my people as to the law of quarantine has been changed and a good deal has been brought about for and by the children. If you go to see them or any one in their house today with a contagious or placardable infectious disease, and that placard is not put on that house the next day, when you get there every child in that house almost at one voice asks you, "Where is the card, and why ain't it on the house?" I have seen the time in Charlotte when it took two policemen to keep a card on the door. Now it takes two or three policemen if you don't put on the card. That is the sentiment among our people.

About the venereal side of it, I always get weak when that comes up, because every man who is guilty of having a venereal disease is a moral slacker. He is a menace to his community, and during the time of his infection his moral character is gone. That is my experience, publicly expressed. I have never been able to collect a fee out of a man who had that trouble if I gave him credit while I treated him.

I want to thank you for calling me out. I want to thank you now, also, for putting on me the burdens of the presidency of the North Carolina Medical Society for this year; and while it has had its pleasures, and while I am looking to the culmination of the last pleasure within the next two or three days, even when I used to plow cotton, no year has had the work that has come to me this year.

I am glad to see you here, and I hope you will stay until the gavel falls Thursday morning when the sixty-fifth annual meeting of this Society shall be in the history of the past.

Dr. D. C. Absher: Before we adjourn Dr. McBrayer has some announcements to make with regard to the visit to the State Sanatorium.

Dr. L. B. McBrayer: As you note from the program the afternoon session will be held at the Sanatorium, and cars will be in front of the entrance to this building or on the parking space, and it is desired that we leave immediately at two o'clock. That will give you ample time to get your lunch, and at the Sanatorium you will receive a warm reception and a cold bite. It may be that some of the cars in which you ride will be burning kerosene, but the roads are good, as all roads are in this

section, and we will guarantee to get you over there and get you back. The Association will be called together promptly at three o'clock in the Assembly Room, and in addition to the program as printed the Sanatorium staff, at the request of several health officers, will exhibit some reactions from the Von Pirquet Diagnostic Test, ranging from twelve to fourteen hours to three days. That will only take a few minutes. Following the cold bite, after adjournment, we shall be glad to have you visit any and every part of the Sanatorium plant that you may desire. If you care to go on the farm and see the cattle and garden, hogs, etc., the cars can be driven down there. The latch string will not hang on the outside at the Sanatorium this afternoon, because everything will be wide open over there. I trust that you will all be prompt, so that we may leave promptly, and that we will all have as good meeting this afternoon as we have had this morning.

AFTERNOON SESSION

Dr. D. C. Absher: The meeting will come to order. The program for the afternoon will consist of reports from our county and city health officers, and the reports are not to exceed five hundred words. Some of you perhaps have not written your reports, and those who have not written their reports can just make them orally. Any man who talks longer than five minutes will be called to time.

The Secretary will call the health officers in alphabetical order.

Dr. G. M. Cooper: We hope and plan to have this one of the most interesting sections of the meeting, and any man can make it just as interesting as the work in his county will justify, therefore we will call on them alphabetically.

ALAMANCE COUNTY HEALTH DEPARTMENT

W. R. Goley, M.D., Graham

I have no report prepared. I was elected January, 1918, as health officer. Our county institutions are in average condition; very little sickness among either inmates of county homes or prisoners. I find whooping-cough and measles prevalent in several townships; two cases of smallpox. I find people take quarantine more cheerfully than in former years.

ALLEGHANY COUNTY HEALTH DEPARTMENT

JOS. L. DOUGHTON, M.D., SPARTA

Relative to my report as Health Officer for Alleghany during last year, will say that conditions have been normal here or practically so. We have had no outbreaks of contagious diseases reported, with the exception of a few cases of measles and diphtheria, which were promptly quarantined.

BUNCOMBE COUNTY HEALTH DEPARTMENT

DAN E. SEVIER, M.D., ASHEVILLE

The work of the County Health Officer in so large a county as Buncombe cannot be specialized, but of necessity must be very general.

First, there is that work which comes under the head of general practice of medicine, which includes the care and attention of the various county institutions, viz.: the county home for the aged and infirm, the county jail, house of correction for fallen women, three convict forces located in different localities of the county, the children's home, and the reformatory, the above numbering more than two hundred county patients to care for, saying nothing of the many county charges that are looked after and treated by order of the board of commissioners. Have examined all lunatics for commitment by the clerk of the Superior Court, and performed all duties as required by the presiding judge of the various criminal courts. Some of the above institutes are visited daily. Have treated a number of fractured limbs; operated on three cases of hernia, two being strangulated, restoring the men from invalids to normal condition. Have kept all institutions vaccinated against smallpox and typhoid fever.

A part of Mondays and Saturdays of each week I devote to office work, on which occasions my time is given to the correspondence connected with the office, the holding of consultations with those seeking advice, the hearing of complaints of various kinds, and many other things.

The first Monday and Tuesday of each month is taken up by making examinations of persons applying to the board of commissioners for exemptions and assistance from the county.

Have checked the dumping of garbage, dead animals and fowls along our public highways; have removed surface closets and hog pens from the roads of the county.

Have abated thirty nuisances, assisted in cleaning up small incorporated towns of the county. Quarantined a number of families with

communicable diseases, and at the required time saw that they were released and properly fumigated.

Have attended to the wants of the physicians of county, such as seeing that microscopical examinations were made of the specimens and promptly reported to them. Have seen that all persons known to be exposed to diphtheria, where unable, were furnished the antitoxin free at the expense of the county, and in my judgment many lives have been saved. Have also furnished the physicians making requests with antityphoid vaccine.

Have conducted six weeks antityphoid vaccination campaign, and this work has greatly reduced typhoid in Buncombe County.

As far as known, all cases of typhoid and tuberculosis have been instructed as to the necessary precautions to be taken to prevent the spread of the above diseases. All homes where tuberculosis patients die are fumigated at once.

More than five hundred persons have been vaccinated for smallpox and other work has been done of minor importance.

Many water supplies have been examined, with six water supplies condemned. During the past year more than five thousand miles have been traveled in looking after the health of the county.

Owing to the short term of schools and bad weather, practically nothing in the way of school inspection was accomplished, more than the classification of the cards of sixty-four schools, which will have prompt attention when they open in the early fall.

Every minute that could be spared from county work was rendered the Government in doing local exemption board work and making the physical examinations of all of class one men, which numbered more than seven hundred. This service was rendered to the Government without pay.

I might say here that I have made thirty-six health talks, and usually make them at the time we are making these antityphoid campaigns, because you have a better crowd at that time.

Maj. Joseph Howell Way: That is a report from a model whole-time county health officer. You will pardon me if I ask him one question. Have the authorities of the county of Buncombe raised your salary?

Dr. D. E. Sevier: No; for the information of the gentleman, I will say Buncome County, since the establishment of the office in October, 1913, has paid a salary of $2,000 per year, that is $166.67 per month.

Major Way: When you go back I want you to tell them it was the unanimous opinion of this Society that your salary ought to be raised.

Dr. D. C. Absher: Would the Association care to discuss any of these reports? What are your wishes? If you have any questions to ask or any discussions to make go ahead any time you desire.

Motion made by Dr. Miller that the discussions of all the papers be at the last; motion seconded; carried.

CALDWELL COUNTY HEALTH DEPARTMENT

L. H. Coffey, M.D., Lenoir

The work in Caldwell County, I think, is in better condition than it has heretofore been, and the doctors in the quarantine work coöperate; also the individuals, but the individuals are very slow to get on to the laws relating to the quarantine work. I find from the different schools that most of the people in our county would be glad to add to that list mumps, but I suppose the State Board of Health would have that in charge. There is some mumps in the county, and a good many of the doctors sent in reports, but it has not been quarantined. That with chicken-pox and scabies we think very detrimental to the work, and ought to be added to the list.

Last summer I, with the other doctors, vaccinated about six thousand against typhoid, and I believe this, with the quarantine work, looking after the county home and jail, is about all that I have to report.

Dr. G. M. Cooper: I will say that I had a letter from Dr. Shipp last night. He is in Johns Hopkins Hospital in Baltimore, and seriously ill. He has never missed a meeting. I wish the meeting to take whatever action they wish tonight.

CHATHAM COUNTY HEALTH DEPARTMENT

L. E. Farthing, M.D., Pittsboro

The work in my county has been moving along very smoothly during the past year, and when I say this I deem it a frank admission that there has been but little done, for at this stage of this work in most parts of North Carolina, if anything much is done it will surely cause more or less discord. My county has as yet only required those things done that are specifically required by statute, such as medical attention of the inmates of the county jail and county home, although I have availed

myself of every opportunity of talking to the teachers in their meetings; and I think this is one of the best mediums whereby we can teach the people things they should know relative to health.

I would like to say a few words relative to the new quarantine laws as are now in operation in North Carolina. They have made order out of chaos. Under the old system there was no one that really knew exactly what to do, in case of one of the quarantinable diseases developing in the community, and especially in a school community; but now as soon as the disease is reported to the quarantine officer he sends to the householder a placard with complete instructions as to how to handle the disease, and how long he is in quarantine, and the same mail that takes this to the householder takes a notice of the existence of disease and complete instructions as to what to do and what not to do to the teacher of the school. This seems to me to be an almost ideal system when cost of executing the law is considered. I would make this suggestion, to add to the form letter the date of expiration of quarantine.

Having recently had the opportunity of examining and seeing examined quite a number of our young men—young men at the age when they should be in their prime, and I have been astonished to find that so large a per cent are in poor health, and worse still, with diseases or conditions that could have been remedied. To have a young man apparently in good health come in and to find that he has a hernia with a small ring and easily curable; or to have one say, "Doctor, you will have to sign my name for me, as my eyes would not let me go to school," when glasses brought his vision almost up to normal; or to find one with faulty developed features, and a mentality below the standard, and upon looking into the nasopharynx to find adenoids possibly now somewhat atrophied, but they have done their work for the man. When I see this I feel that there must be something done, we being a liberty-loving people and like to boast of our liberty; but there is a difference in liberty and neglect, and I feel that this is where liberty has lapsed into neglect. I also believe that if our forefathers could speak now they would say this was not the kind of liberty they fought for, but would say instead that if the standards they set up were maintained something would have to be done to better these conditions.

We hope to have medical inspection of the school children this year, for I am of the opinion this is one of the best ways to overcome these conditions.

CHOWAN COUNTY HEALTH DEPARTMENT

J. W. Warren, M.D., Edenton

As I understand, my purpose at this meeting is to read a report on health work of Edenton and county of Chowan since August 1, 1917. On this date I was elected Health Officer and Quarantine Officer of said county, and will now read a report of my work since the above date until April 1, 1918.

CONTAGIOUS AND INFECTIOUS DISEASES

August—Typhoid fever: 6 cases. Did not have any other reports that month.

September—Typhoid fever, 1 case; whooping-cough, 8 cases; diphtheria, 3 cases.

October—Whooping-cough, 10 cases; diphtheria, 2 cases.

November—Whooping-cough, 21 cases; measles, 6 cases; diphtheria, 1 case.

December—Whooping-cough, 10 cases; measles, 35 cases.

January—Diphtheria, 1 case; measles, 12 cases.

February—Whooping-cough, 10 cases; measles, 9 cases.

March—Measles, 10 cases; mumps, 27 cases; infantile paralysis, 1 case.

This case of infantile paralysis was reported to me by a negro doctor, and, as we know, they often make mistakes in diagnosis. I didn't see the case. It died in twelve hours. I believe it was a case of spinal meningitis.

Schools.—We have 18 white schools and 15 colored. Our schools, most of them, are of modern structure. The light and ventilation are very good in the white schools, but not so good in the colored, due to the fact that they are not of modern structure, but I presume they are as good as the majority of the colored schools throughout the country. I made one lecture to one of our white schools on rural sanitation, and have visited several white and several colored schools and distributed literature on contagious and infectious diseases.

School Census.—I mailed out to all of the teachers in my county school census blanks to be filled out and returned to me as soon as possible, and only got returned about 30 per cent. Some of the teachers didn't return blanks to me as promptly as I thought they would.

County Home.—The county home of Chowan County is located about ten miles from Edenton. I have to visit the county home once a month, and as often as my services are needed. On inspection of the county home once a month, I usually find it cleaned up and disinfectant used. In one month I had as high as five inmates, but as a rule two or three. I have now one white and one colored.

County Jail.—Our county jail is located behind the courthouse—brick structure. Unfortunately, our jail is poorly ventilated. On inspection once a month, and as often as my services are required, I usually find the cells cleaned up and disinfectant used.

As soon as contagious and infectious diseases are reported to me, I report them to the State Board of Health, and mail them out placards and pamphlets to the householders in the country. If in town, I go myself. I have right much trouble in getting a receipt back stating that said householder received placard, yet on the date said placard is to come down they usually notify me and I get them to receipt it and bring the placard in with me.

Now, speaking for the town of Edenton and Chowan County in general, I must say that there has been very little sickness since I have been Health Officer and Quarantine Officer of Edenton and Chowan County, and the sanitary conditions have been very good. I hope to have less sickness and the cleanest, the most sanitary town and county this year in the State of North Carolina.

I am part-time Health Officer of a very small county.

DARE COUNTY HEALTH DEPARTMENT

Franklin P. Gates, M.D., Manteo

In order to give an intelligent report of many contagious diseases in Dare County, as provided by law, it is necessary to give an outline of the geography of said county. Many of you are already familiar with the geographical conditions, but it may not be amiss to call attention to these things for the benefit of those who may not be so familiar with the situation.

Like the earth, Dare County is composed of one-fourth land and three-fourths water. The land portion of the county is sparsely populated. In area the county is one of the largest in the State, but in population it is one of the smallest, having less than five thousand men, women and children within its borders. With the exception of Roanoke Island, which contains approximately half the population of the entire county, the inhabitants are settled in isolated groups, separated from each other by wide stretches of water or sand, as along the "Banks," or by water and swamps, as on the mainland.

It is frequently the case that there are contagious diseases in these isolated neighborhoods, where no physician is available, in which the heads of families affected fail to report the disease or seek medical treat-

ment. Under these circumstances it is only possible for the County Health Officer to learn of the existence of the disease in that locality by hearsay, either while the trouble exists, or, as is frequently the case, after it has ended. That conditions may be better understood, I will say that there is no one of the isolated communities in the county that cannot be reached in a boat, either by the sheriff when visiting these communities to collect taxes, or by the Health Officer. Using these facts to illustrate the difficulty in keeping in touch with these isolated communities, in explanation of the conditions confronting the Health Officer of this county, the following statements may be more readily understood.

To illustrate: There was an epidemic of smallpox at Stumpy Point, a community having about two hundred and fifty population, all told, in 1905. The knowledge of the existence of this epidemic was kept strictly within the community. As a result, about half the population were affected. Fortunately there were no deaths. In November, 1914, this same community had an epedemic of smallpox. Upon receipt of information I went to the section for the purpose of vaccinating the school pupils and others who desired vaccination. Only about 50 per cent of the school pupils and very few of the citizens were willing to be vaccinated. Some of them told me they preferred having the smallpox to being vaccinated.

In October, 1914, a resident of this community was a juror at the Fall Term of Dare County Superior Court, and served in that capacity, with the result that every member of the petit jury who came in contact with him was affected, and the disease was well distributed throughout the county. In his own community there were sixty-five cases. The community at the next nearest postoffice had ten well developed cases before the spread of the disease was stopped by vaccination, and the disease was carried to other communities throughout the county, the manifestations of the same being at Hatteras, Buxton, East Lake, and other sections, in addition to fully distributing the disease throughout Roanoke Island, through those who were on the jury with this party or others who got it indirectly from him. It was at this time that I fully tested the advantage of timely vaccination.

Mr. C. was taken two weeks from the session of court. Prior to the manifestation of the disease, his two daughters had been vaccinated with success. During the illness of the father the daughters were in attendance upon him day and night, subjecting themselves to contagion in every possible way, but neither of them then or thereafter manifested the slightest symptoms of the disease. This, perhaps, is the most marked instance of direct exposure we had, but there were numerous other

instances in which there was at this time exposure to smallpox, in which contagion was prevented by vaccination.

During six months of the latter part of 1914, and all of 1915, with the assistance of my associates, we vaccinated more than nineteen hundred individuals, using exclusively the "Park-Davis" virus. In this number not more than eight failed to take *with satisfactory result,* demonstrating vaccination as practically assured means of prevention and protection.

During the summer of 1915 and 1916 we vaccinated about two hundred individuals for typhoid fever. The result of this has not been so closely followed as in preventive treatment for smallpox, for the reason that we are virtually immune from typhoid fever in Dare County. Nature supplies a washout every few weeks, and we are protected from this disease by pure air and abundant sunshine.

Our people live in plain, well-aired homes, exposed to health-giving sea breezes, with abundance of salt air, this having a tendency to sweeten conditions for the fish-and-oyster-fed inhabitants of Dare County.

At this writing there is raging an epidemic of measles on Roanoke Island. It is probable there are more cases of this disease than there would otherwise be, by reason of the fact that parents of children who have not heretofore had this disease wish to have their children have it at a time when they will have home treatment, and home nursing, and be under the direct care of the family physician, while such opportunity for treatment and nursing, under conditions alike satisfactory, might not be present when the children are older and have scattered from their homes. A young man was sent to a training camp last October from Manteo. While in camp he contracted measles, followed by pneumonia, and he was returned to Manteo to be buried. However skilled may have been the physicians who treated him and the nurses who attended him, it is not possible to convince his immediate family that better nursing and better treatment would not have been received by him had he been at home during his illness. This is but an incident illustrating the reason for the existence for the almost universal local desire for members of the various families, yet subject to this disease, to *have it now.*

Our people do not dread measles, mumps, whooping-cough and other contagious diseases, when the home people can do the nursing and the family physician prescribe the treatment. Human nature is the same wherever it may be found.

We would like to go more in detail, but the ruling prevents.

DAVIDSON COUNTY DEPARTMENT OF HEALTH

E. F. Long, M.D., Lexington

I do not attempt to take up in this paper all the activities of the health department, but rather to give attention to some of the units we have undertaken.

The spring months of 1917 were devoted to inspection of school children and instruction in personal hygiene to school children. This service was resumed in February, 1918. Preliminary examinations by teachers of 85 per cent of school children have been conducted. Forty per cent of defective school children have been examined by the health officer.

On July 1, 1917, the Davidson County Department of Health was organized under the direction of the State Board of Health. An intensive soil pollution campaign has been conducted since that time, embracing a systematic house to house canvass by a corps of civilian field inspectors who make and record a comprehensive survey of the premises of each home, including the water supply, screening, drainage and sewage disposal, as well as the personal and family history of each member of the household. Suitable literature is presented and the family instructed regarding sanitary improvements, screening, ventilation, sunlight, etc. Specimen containers are left and fecal specimens collected and examined for intestinal parasites, treatment provided and delivered to the homes of all infected cases. A total of 3,814 rural homes have been surveyed. Sixty per cent had no sanitary conveniences whatever, 1.3 per cent had safe sewage disposal. Thirteen per cent of home have been sanitated. Eighty-one lectures, illustrated by stereopticon pictures, portraying dissemination of preventable diseases and methods of control have been delivered at school houses and churches with a total attendance of 8,464. Each home satisfactorily sanitated becomes cumulative in its effect—the families so provided are almost invariably enthusiastic exponents of the methods advised.

The County Department of Health, by special arrangement, assumes control of the three incorporated towns in the county. Of a population of thirteen thousand the survey disclosed 1,730 open closets. These are rapidly being displaced by sanitary closets and sewered water closets. The work will be completed in the early summer.

The recent quarantine regulations have proven entirely satisfactory. A majority of all cases of quarantinable diseases are being promptly reported by the householders. Teachers and public spirited citizens almost invariably inform us concerning attempted infractions of the law. A total of 694 homes were quarantined during the year.

Special mention is made concerning improvement of the sanitary arrangements and care of the prisoners at the convict camp. Chapter 286, Public Laws of 1917, provides a minimum standard of hygiene and sanitation for prisoners. In conformity with this requirement, the health officer notified the board of road commissioners that this law should be obeyed in Davidson County. The usual custom of economizing on maintenance, securing the maximum of labor for a minimum of expenditure had been followed. The board adopted the suggestions offered, not without misgivings, however. The results have proven highly gratifying to the officials, the management and the prisoners. Shackles were immediately discarded. No attempt at escape has been made during the ten months operation under the new regime. Each prisoner is carefully examined on arriving at the camp. Safe disposal of excrement is provided, regular baths, individual towels, soap, basins, table equipment, sheets, pillow cases and every garment stamped and scrupulously boiled, cleaned and returned to the individual. The morale of the prisoners is excellent. They perform their duties cheerfully, and show their appreciation by observing the rules without protest. Seventy per cent of the prisoners were allowed to spend a three days vacation at their homes during the Christmas holidays. Every man returned before the hour designated for his arrival. A total of only seven days loss of time from illness has occurred. The management is confident that increased efficiency in labor has resulted.

COUNTY AND CITY OF DURHAM HEALTH DEPARTMENT

Arch Cheatham, M.D., Durham

We have been carrying on our usual routine work, inspecting schools, lecturing to school children and the public, when at night time using the lantern slides. The records of susceptibility of school children to contagious diseases are about completed. During the year we have had 416 septic tanks installed in the county, which has added a great deal to the sanitary equipment. Our dairymen we have been educating up to a high standard of milk production, and, as an evidence of their efficiency, they carried off both State and National prizes for the best market milk. The work in our laboratory has been greatly increased during the year. We examine all specimens for physicians in Durham and adjacent counties. The total number of examinations was 1,566, of which 932 were for physicians. We keep on hand typhoid serum and smallpox vaccine, and during the year 1917 we administered 922 doses of anti-

typhoid serum and vaccinated 783 persons against smallpox. I wish to state that we are using the vaccine obtained from the State Laboratory, and find it very satisfactory. We are pleased with the progress made in educating the darkey along sanitary lines. Last summer our colored people took great interest in health work, both in county and city. They carried on a propaganda of health work for better housing conditions, better living conditions, and more sanitary surroundings. At the end of this campaign over 2,000 of their homes were found thoroughly renovated (houses and yards), many houses painted, and fences and trees whitewashed. The same campaign will be conducted again this year.

Organization:

Superintendent.
Bacteriologist, Meat and Milk Inspector.
Two District Nurses, one white and one colored.
Two School Nurses, one white and one colored.
Nurse in office acting as clerk.
Three Sanitary Inspectors (police), two mounted.

EDGECOMBE COUNTY HEALTH DEPARTMENT

K. E. Miller, M.D., U. S. P. H. S., Tarboro

My report differs somewhat from the reports of the other counties of the State in that I have nothing to do with the care of prisoners, paupers, jails, etc. That is done by the county physician. We have our county physician, who looks after that, and I do nothing but health work.

The following summary is prepared to cover the period from February 1, 1917, to January 31, 1918, for the reason that this represents the first year's work. It is considered necessary to adopt this period for a yearly report rather than from April to April, because the initial expenditures for equipment are thereby included, but would be excluded if the latter period were followed:

1. Diseases reported, investigated, and quarantined:
   a. Infant diarrhea, 16 cases.
   b. Malaria, 93 cases; reporting discontinued September 1.
   c. Tuberculosis (pulmonary), 19 cases.
   d. Typhoid fever, 55 cases.
   e. Smallpox, 32 cases.
   f. Diphtheria, 25 cases.
   g. Whooping-cough, 83 cases.
   h. Measles, 131 cases.
   i. Scarlet fever, 2 cases.
   j. Infantile paralysis, 1 case.

2. Vaccinations against smallpox, 463.
3. Vaccinations against typhoid fever, 500.
4. Special investigations, 105.
5. Physical examinations, school children, 1,432.
6. Physical examinations, others, 294.
7. Letters sent out, 3,909.

a. Up to November 1, 1917, 2,349, at 2 cents each	$46.98
b. Since November 1, 1917, 1,560, at 3 cents each	46.80
Total	$93.78

8. Newspaper articles, 61.
9. Public lectures, 73.
10. Attendance at lectures, 2,208.
11. Prosecutions for failure to comply with county laws regarding infectious and contagious diseases, 2:
    a. Colored tenant farmer, 1.
    b. Practicing physician, 1.
12. Installation of sanitary waste disposal system for the City of Tarboro, comprising about 150 sewer connections and over 500 sanitary privy boxes, together with a competent and efficient scavenger service to operate the latter.
13. Many other details too numerous to mention.

The entire cost of this work, aside from the salary of the Health Officer, which is paid by the United States Public Health Service, amounted to $1,212.86. This, however, does not represent a fair average yearly expenditure on this basis for the reason that the project was an entirely new one which necessitated considerable overhead expense at the start for automobile, office furniture, and supplies. Similarly the volume of the work done must be viewed from the standpoint of a new undertaking which required considerable time to get organized and functionating.

A positive advance is thought to have been scored in case reporting which is considered the foremost task in a new health regime. At first practically all reports came from the physicians. At the present time the reports from householders outnumber those from physicians about ten to one. Thus the consciousness of the presence of a health officer in the county seems to be established in the popular mind.

Of all cases reported the greater part have been visited personally from one to three or more times.

The record for typhoid fever and smallpox is especially noteworthy. It is believed that the reports for these two diseases represent practically all the cases that occurred. There were only 55 cases of typhoid fever in the county, and so far as I have been able to find out, there were only

four deaths from this disease. Two of these should not be charged against the county, as they were brought from other counties in a dying condition in each case. This is highly gratifying as compared with 22 deaths for 1915, the latest report. For smallpox the sickness rate was small, 32 cases, and no deaths have been traced to this cause. Of special importance in the case of both smallpox and typhoid is the fact that in no instance were there any secondary cases after the original report reached this office.

Considerable sanitary improvements were accomplished in the rural homes as well as in the towns, but I have no figures to show the extent of these.

Very promising results are being obtained from a set of regulations covering the practice of midwifery in the county, which were framed and put into operation at the first of the calendar year 1918.

Some of the biggest health problems are represented by the following:

1. High infant death rate.
2. High tuberculosis death rate.
3. Large negro population—about 2 to 1.
4. Bad sanitary conditions:
    a. General use of open surface privies or none at all.
    b. Large number of open surface wells.
    c. Swamps and other abundant foci for breeding of anopheline mosquitoes.
5. Correction of defects in school children, a problem heretofore untouched.

It is believed that a creditable start has been made on some of these problems, but nothing more.

FRANKLIN COUNTY HEALTH DEPARTMENT

J. E. Malone, M.D., Louisburg

Have made all examinations for selective draft in Franklin County, and done the routine work incident to being county physician.

Have visited 25 schools and examined 1,615 school children as medical inspector under the medical inspection law.

FORSYTH COUNTY HEALTH DEPARTMENT

A. C. Bulla, M.D., Winston-Salem

To give an accurate account of the work done in one year, in five hundred words, in a county of seventy-five thousand people, thirty thou-

sand of whom are under our care, and institutions to take care of the unfortunate poor of the total population, is almost as impossible as it is to count the stars in the heavens on a starry night. In making this brief report, I wish to divide the year's work into health and institutional; give an outline of the work pursued and the results obtained. The health work has included quarantining contagious diseases, medical inspection of school children, campaign against filth-borne diseases, sanitary surveys and educational.

The quarantine work has been carried out under the directions of the State Board of Health. Through the press, the postal service and the school teachers the quarantine law has been kept before the people, and I have good reasons to believe that most all cases have been reported. When the physician in charge was in doubt about his diagnosis an investigation was made. As a routine, when possible, I have made a personal visit to all cases of scarlet fever, diphtheria, epidemic meningitis, and smallpox. The number of communicable diseases reported during the year are as follows:

Measles, 437; whooping-cough, 92; scarlet fever, 72; typhoid fever, 43; diphtheria, 19; smallpox, 5; epidemic meningitis, 4.

One hundred and seventy-eight visits were made to placard homes and investigate contagious diseases.

Medical inspection of school children has been made the major work during the winter months, and carried out under the directions of the State Board of Health. Examination cards were distributed to all schools and teachers were instructed how to make the preliminary examination. The results have been most gratifying, while in some instances but very little weight can be attached to the teachers' examinations. Susceptibility reports have been received from most of the schools. Fifty-two schools have been visited, sanitary conditions noted, lectures made on health subjects at each school and one thousand three hundred and ninety-seven school children examined for physical defects. No accurate data has been collected as to the number having defects treated.

During the summer months principal attention was focused on typhoid fever and other filth-borne diseases. Eighteen typhoid dispensaries were held and two thousand eight hundred and ninety doses of vaccine given. Health literature was distributed at each dispensary.

A sanitary survey was made of the one hundred and eight public school buildings, both white and colored, which included locations, buildings, source of water supply and sewage disposal. The survey was made for the purpose of securing, if possible, better hygienic conditions, such as proper ventilation, good light, safe water supply and sewage

disposal. Report was made to the Board of Education with recommendations.

All health work being educational, it is hard to estimate the amount done. The avenues through which I have endeavored to reach the people are the local papers, postal service, public lectures, talks to school children, personal visits and distribution of health literature on various health subjects.

The institutional work in Forsyth, which includes county home, reformatory, jail, two convict camps and a tuberculosis hospital, has in many ways handicapped the health work and has taken more than half of my time. On an average about two hundred and twenty-five inmates and prisoners are cared for and given medical attention each month. For various causes two hundred and sixty-three visits were made during the year. At the beginning of my work last year a sanitary survey was made of all institutions and a physical, and as far as possible, a mental examination was made of all inmates and prisoners. Since then they have them examined when admitted.

Up until the first of the year the indigents of the county came under my care. Seventy-six visits were made to thirty-two patients.

In conclusion, I wish to say a few words about the tuberculosis hospital mentioned above, which I feel is serving a very important place in health work. It is built on the county farm, and in this way gets the benefit of water and sewer system from the county home, therefore lessening expenses. The site is a very desirable one with a nice one-story frame building, modern in every detail—steam heated, electric lights, water, etc. It accommodates twenty-four patients, twelve white and twelve colored, divided equally between sexes, but by using the porches for bed-rooms, it will accommodate twenty-four of each race, making a total of forty-eight. The building is in three distinct parts, yet closely connected. The main building, which is composed of office, reception hall, two well ventilated and lighted bed-rooms for nurses, with large bath. The nurses' dining-room joins the butler's pantry, which leads into a large and well-equipped kitchen. The patients' dining-rooms are connected with kitchen by swinging doors, with outside doors for entrance. This is all very distinct from the wards, which are on either side of this building, and are connected by covered porches. The wards consist of two rooms each, with bath, dressing room, individual lockers, linen-room, with a wide screened sleeping porch at back and a narrow porch in front for sun bath. The reception room is used by both sexes, situated between the separate wards. It has two outside doors, three large windows, easy chairs, writing table, games, pictures, reading matter, etc. This applies to each ward.

The nursing staff is composed of two graduate nurses. We employ a cook. The orderly is furnished by the county. The health officer is the physician in charge. The hospital was opened to patients September the twentieth, and since we have accommodated thirty-seven patients, ten of whom were discharged, not cured, but we feel that we have instilled in at least a part of them the teachings of right living and proper hygienic sanitation. Ten very advanced cases have died. Of the seventeen now in the hospital, more than half are on the road to recovery.

WINSTON-SALEM DEPARTMENT OF HEALTH

R. L. Carlton, M.D., Winston-Salem

In presenting this short resume of the year's work of the Department of Health of Winston-Salem only enough statistics will be mentioned to give a fair estimate of what has been done.

Our force consists of full-time Health Officer, laboratory director, who is also dairy inspector, meat and other food inspector, two sanitary patrolmen, two public health nurses and secretary.

There has been no great outburst of enthusiasm during the year along lines of public health, but we feel that good work had been done in all departments, and that the public as a whole is better developed along lines of thinking in terms of public health, and that our people are more nearly ready now than at any previous time to help "keep well folks well."

Vital Statistics.—The following were recorded:

Births during 1917, 1,099; deaths during 1917, 920.

Among the causes of death we note:

Pneumonia, 184; whooping-cough, 22; typhoid fever, 18; tuberculosis (pulmonary), 93; diarrheal diseases, 101; prematurity, 39; stillbirths, 79.

Our department has emphasized the fact that these are preventable diseases and that economic, social and housing conditions must be improved, and insanitary surroundings cleared away and educational influences brought to bear on maternal ignorance and a system of control of midwives instituted to make an impression on these causative agents.

Contagious Diseases.—We had no violent outbreaks of contagion during the year. To be sure there was at all times a plentiful supply of measles and we had a good many cases of typhoid, but no epidemics.

Early in the year the County Tuberculosis Hospital, to which Winston-

Salem patients are eligible, was opened. This gives us 48 beds to help care for the tubercular poor, and is a fine beginning in a great work.

Schools.—School children have been regularly inspected, nurses visiting every school every day or every other day, and following up sick children or suspected cases.

School inspection cards filled out by teachers and nurses for 6,000 children have been turned in to the health office, and at least 500 children have undergone complete physical examination at the health office, and of the defectives found a splendid number have been treated with good results.

Charity.—From our department at least 100 calls per month are made as city physician. All cases entering the city hospital as charity patients are first visited and passed by our department.

Sanitation.—Our city last year began the installation of water and sewer lines costing $300,000. This work is to be finished this year, and when completed will put city water and sewer into every home in the city.

There are still a good many wells and many surface privies, and as fast as sewer and water lines are completed the wells are promptly ordered filled and privies torn down. Our general sanitation on account of these things is improving very markedly. We have on our streets a motor-driven street flusher recently installed, which is helping to lessen the dust hazard.

Inspection of the city's watersheds, two in number, is done by a member of our department every three months. Conditions generally show an improvement all over the sheds.

Food and Food Handlers.—During the year our milk ordinances were revised and are now being enforced, requiring all sweet milk sold to come up to certain requirements and be graded and sold under label. All cows supplying either sweet milk or buttermilk are tuberculin tested every year. Dairies are inspected at least every sixty days. Samples of milk analyzed every two to four weeks to determine food value and bacterial count.

During the year there was put into operation an ordinance requiring all food handlers at hotels, cafes, restaurants, markets and grocery stores to undergo a physical examination and secure from the department of health a food handler's industrial certificate, declaring them to be free from any contagious disease, before being allowed to handle food at any of these places. This required the examination of some 700 persons, and resulted in the elimination from this class of work of several people affected with tuberculosis and venereal diseases.

City Laboratory.—Inspection of the laboratory records shows that during the year a good many pathological specimens were examined, analyses made of 500 water samples and 700 milk samples, 150 special examinations and 903 bacteriological examinations. Very recently our laboratory has added the equipment necessary for examining dogs' heads for rabies, and we find that having this examination made in our own laboratory, instead of sending the specimens to the State Laboratory, is very satisfactory. Our laboratory is also equipped to make complete analyses of mothers' milk.

Our Needs.—Among our greatest needs in Winston-Salem are a contagious disease hospital, clinics for diagnosis and treatment of tuberculosis, and baby welfare clinics for the diagnosis and treatment of babies, and for the instruction of mothers, and for the dispensing of milk in selected cases.

These things are all coming. The Board of Health and city aldermen are solidly behind the Department of Health, and the public as a whole are relying on it more and more from day to day.

GUILFORD COUNTY HEALTH DEPARTMENT

W. M. Jones, M.D., Greensboro

I have no formal report to make, as I have done little of special interest besides the regular routine work, such as is designated by statute, viz., looking after the county institutions, quarantine, school inspection, the examination of the mentally defective, etc.

I wish to call your attention to two communities where similar results have been obtained by different methods. Both of these communities have had to my certain knowledge not one, but several cases of typhoid every summer for the last seven, with the exception of the one just passed. In one community almost the entire population was vaccinated, and in consequence there was only one case, and this party did not take the vaccine. This was a typical small town community, and in no wise an exception to hundreds of such that we have in the State. The other was a cotton mill village of about one hundred and fifty homes. Here all of the wells were deep, and are supplied with a pump, and in addition every house was equipped with an L. R. S. tank, and here we have had no typhoid since the installation of proper sewage.

HARNETT COUNTY HEALTH DEPARTMENT

J. W. Halford, M.D., Lillington

I have no formal report to make. I have done the routine work that a health officer is expected to do. I would include in that a few lectures. I have delivered about twenty-seven lectures in schools and at the teachers' institutes. Some of these lectures were illustrated. I also have immunized something like 450 persons during the year against typhoid fever, particularly school children. Of course I have taken care of the county home, and I might say here that we have very few inmates of the county home in Harnett County. Our jail poulation is even less. We have an occasional inmate, and, of course, I look after that.

Regarding quarantine work, I wish to criticize the doctors of my county. Fully half the doctors have never submitted reports of communicable diseases. One doctor that came under the strong arm of the law has been very prompt since that time in reporting. I think the majority of my reports come from that doctor. I am going to invite Dr. Crouch to visit our county again and stir up the doctors in the lower part, where most of our doctors live.

The county home is an unsanitary institution, and for the past twelve years, since I have been connected with the county health work, I have urged that the condition be improved. I was very much impressed with the report of the gentleman from Forsyth County. When we recall that the State Sanatorium can accommodate 125 persons, we at once realize the magnitude of the work in Forsyth, where forty are cared for. And referring more particularly to the State Sanatorium, I believe every county home in the State should be made an adjunct to this institution. We could take care of these people until the State institution could make room for them. I hope the State Sanatorium may receive sufficient appropriations so it may be made a great blessing to the State and a boon to suffering humanity.

HAYWOOD COUNTY HEALTH DEPARTMENT

J. R. McCracken, M.D., Waynesville

I would like to say in this connection, with regard to smallpox vaccine, I used vaccine from one of the leading biological laboratories of the country and part from the State Laboratory, and I got more satisfactory results from that manufactured by the North Carolina Laboratory of Hygiene.

On account of several of our physicians being now in the service of our country, and the county physician having been appointed Surgeon of the Haywood County Exemption Board, we have been unable to accomplish many of those things for which we hoped early in the year.

Last spring we had in and around Canton (a manufacturing town of 4,000 inhabitants) a real scourge, in one of the worst epidemics of typhoid fever that has occurred in our State. We called upon the State Board of Health, which responded readily, Dr. Crouch finally deciding that the origin of the infection was the city water supply. This system has been improved, but is not yet satisfactory. Condemnation proceedings are now pending whereby a large watershed will be bought and controlled by the city government, and an up-to-date water system will soon be installed.

We did not have many cases of contagious diseases in the summer of 1917, but in the fall there were quite a number of scarlet fever cases. These were all quarantined according to law and no deaths occurred so far as I know. In the fall and winter we had a general epidemic of whooping-cough reaching, I think, almost every school in the county. I find whooping-cough one of the hardest epidemics to control, especially while the schools are in session. A child contracts the disease and exposes an entire school before his trouble is diagnosed. If, in the beginning, it made children sick, we might suspect it and take precautions, but as it is, we too often suspect it too late.

The medical inspection of schools was to be undertaken, and was undertaken, but without much progress so far. With difficulty I persuaded our commissioners to make the appropriation for this work. On account of the scarcity of physicians in my town, and my having to spend so much time helping to swell the ranks of Uncle Sam's army, I was unable to remind the teachers often enough to get the cards all in, less than half the teachers sending in reports. Now that my examination of class one men is practically complete, I propose to take up the examination of the children at once, and when the schools convene again in August I expect to get reports from those schools failing to report last fall.

We have had some few cases of smallpox in the last few weeks, but the people in the infected communities submitted readily to vaccination, and I think the worst is past.

Dr. G. M. Cooper: I would like to say for Hoke County while I am up, that we had one of the most successful medical inspections in this county we have ever had, owing to the follow-up work of Miss Sadie McBrayer, now Mrs. McCain. We got more children treated than we

have ever had up to that time. In Fayetteville one morning just after the campaign closed I saw a wagon loaded with ten children for tonsillar operations from one school in Hoke County.

IREDELL COUNTY HEALTH DEPARTMENT

(Statement by T. E. Anderson, M.D., Statesville)

Dr. McElwee is my townsman and has offices adjoining mine. The reason of his absence today is on account of his absorbing duties on the draft board. I know him to be very busy in this work. He is County Superintendent of Health of Iredell County, and in that office has been most efficient, and has given satisfaction to our people. I am sure it is a matter of deep regret to him not to have met with this Society at this time.

JOHNSTON COUNTY HEALTH DEPARTMENT

George D. Vick, M.D., Selma

My tenure of office as Health Officer for Johnston County only began in September, filling the office previously held by Dr. Thel Hooks, who at that time resigned to enter the service. My work has comprised two monthly visits to convict camps, county jail and county home, with sanitary inspections of same and any subsequent calls in cases of sickness among inmates. The County Health officer works in conjunction with Quarantine Officer of the county, visiting communities where epidemics are prevalent, also visiting the schools of the county for inspection of pupils and their sanitary surroundings.

Dr. W. S. Rankin: May I make an additional report for Johnston County? Mrs. Hooks, wife of Dr. Thel Hooks, is the acting health officer of Johnston County, and the quarantine work of Johnston compares favorably with the county health work of any other county in North Carolina.

LENOIR COUNTY HEALTH DEPARTMENT

J. S. Mitchener, M.D., Kinston

The Lenoir County Health Department was inaugurated August 15, 1917, the fifth of the counties coöperating with the State and International Health Board. Difficulty in securing men made it impossible to

carry out the intensive soil pollution unit as planned. The work was conducted in six townships, three of which were completed. Seven hundred and sixty-nine homes were surveyed. Of these 253 were owners, 514 had closets, while 255 had none. Open wells were found at 476 and driven at 293.

There have been 3,337 examined for hookworm, of which 1,146 were positive. We have given out treatments to 1,078. In one instance where thirteen were reëxamined we found eleven cured. Oil of chenopodium is used in treatments.

There have been 169 pit closets reported as installed. This is twenty-two per cent of the homes reached. All are in rural homes—no villages or communities worked.

The school inspection unit has been introduced this spring. We have had 2,434 cards filled by the teachers. The health officer will examine those that seem to need it this summer. A dental campaign will likewise be conducted.

Intensive hookworm campaign in the rural schools. Seventy per cent of enrollment were examined, sixty-seven per cent positive.

Life Extension unit was inaugurated last fall. One hundred and sixty-seven examinations have been made. For some reason this important unit did not appeal to my people.

We have given 2,794 doses of typhoid vaccine or have immunized about 931 people. No intensive work has as yet been done in this field, as the people need to be educated further to it.

Surveys have been made for Kinston and LaGrange. In each of these towns sanitary ordinaces will be enforced during the coming months.

In educational work fifty-nine talks have been made at schools. Sixty-five other meetings have been held. The most of these were illustrated slides lectures. A total of 6,600 people attended. Since January 1 fifty-two newspaper articles have appeared.

Quarantine unit shows registration of 35 cases of typhoid; diphtheria, 22; whooping-cough, 17; measles, 17; scarlet fever, 3; cerebro-spinal meningitis and ophthalmia, 1. Coöperation has been good, I think, on the part of parents and the medical fraternity.

It is my opinion that when any new county is entered on a full-time health office plan the first year is best spent in intensive education. One should find as early as possible that particular phase of work needed in his particular county and use that as the way to demonstrate to the people the advantages he may offer. The first week may be well spent meeting the medical fraternity.

Many treatments for hookworm our department sends to the homes are not taken, has been my experience. A phobia is to be removed and ignorance treated first. Here the family doctor may assist us. As to the efficiency of oil of chenopodium in a small series of thirteen treated at the Caswell Training School through the courtesy of Dr. McNairy, we found eleven cured. Of these one passed ninety-two ascaris lumbricosis. Many who report lower percentage of cures from chenopodium in rural work do so as the medicine has not been elimated by the gastro-intestinal route.

Regarding the county home and the convict quarters, we have not the best in the State. I am not asking my commissioners for much, as I wish to win their trust in my requests; and, too, I may be conservative, but labor and cost of material are to be considered in these times. Being given authority by the grand jury, I have made my jail prisoners white-wash the jail and do their own janitor service. I wish we could utilize this expensive idle labor in the county's custody in some way for betterment of our health conditions.

MARTIN COUNTY HEALTH DEPARTMENT

William E. Warren, M.D., Williamston

I am going to do my best to get to Pinehurst next Monday, and if it is impossible for me to be there, wish you to report for me the work I have done since your visit here the latter part of February. You recall what a handicap I had in the matter of bad weather, bad roads, work on the local board, delays in opening of the schools and the tardiness of the teachers making physical examinations and sending in those cards. However, I have visited practically all of the schools and examined something near one thousand children, mostly white, and notified the parents my findings and the treatment that must be pursued. Will have to reconvene only one school to get the cards filled properly. The parents will report to me as fast as the children are treated, and those parents that are too poor to have it done, I will see that they get it done if money is their only excuse. Am sure that if I had to wait for these children to come to my office to be examined it would take another year to finish the job, as it is going to take right much education in this county to make them take interest; so I go to the expense and trouble to go to the schools (which I have not more than half finished yet) and explain the workings of the medical inspection law and examine them then to have the happy coöperation of the communities. In some

instances, in the far-off districts, a few parents have taken the children out of school to prevent an examination of them by the teacher. From these examinations I find about 75 per cent with defective tonsils, 60 per cent poor vision, and about 90 per cent defective teeth. Mental age is average; nutrition good in most of them.

MECKLENBURG COUNTY HEALTH DEPARTMENT

C. S. McLaughlin, M.D., Charlotte

Dr. G. M. Cooper: Dr. McLaughlin is the health officer of Mecklenburg County, and has been for nineteen years. This is the first meeting he has ever missed in attending the Association.

Two weeks ago we sent a nurse there to assist Dr. McLaughlin with school work, and I want to report that phase of the work. The teachers' examinations account for a great many school children being treated.

Miss Pratt, the school nurse, writes: "We are going to succeed. Can you believe it? We have found good many treated from teachers' examination. We also have children to come in every few days to be treated. The specialists here are giving us their support. I have quite a list of 'charity' for them. Mecklenburg is a splendid county to succeed in our work. The people are interested." Dr. McLaughlin is so busy with the medical inspection of school children that he is unable to be present today.

Dr. I. W. Faison: Knowing that Dr. McLaughlin always attends, I did not want it to go by that we were not here. I had a talk with Dr. McLaughlin Saturday, and he said a nurse had been sent from Raleigh to help him in making examinations of the school children in his county, therefore he could not see his way to attend.

Dr. McLaughlin has been county physician there for nineteen years, as he says. He is an easy-going man. I wish he had half the vim in him that my young man Mitchener has. I think we would get a good deal more done.

I suppose there is today, and for the last eight or ten months been more sanitary work done in Mecklenburg County than any twenty counties in the State. The conditions have been such that we have had to do it. The camp being there, with twenty to sixty thousand men, coming from all over this country, has brought every conceivable disease a man can think of except leprosy. Those things have been met. Uncle Sam has been exceedingly kind to Mecklenburg County. Uncle Sam is

spending in our county now, I should judge, $10,000 a year in working along sanitary lines to protect the soldiers first, that they may go to France to help protect us, and then they came down and put their hands on us and made us do things that we might protect Uncle Sam.

Another thing, in Charlotte we have a whole-time man there, in health work, a most splendid and thoroughly efficient man. We pay him $2,500 a year. That does not sound like much, but it is rather a good big amount for them to give the first year they started out. That makes something like $12,000 or more being spent. We have had there as high as seven or eight men that belong to the Government at work. We have had five nurses that Uncle Sam sent there, we have had one or two of our own nurses, and we have three physicians of our own there, one of them we claim that does not belong to us, born and raised there, and practices there—a woman in the medical profession, who wears the insignia today as a lieutenant of the United States, at a salary of $800. Through the means of a commission form of government we have been able to go and talk to three men and get things done through those men. I went on the stump night after night trying to get the people to elect the commission form of government. We put three men in there that have the heart and soul in their heads to run the government, and we are doing this in the face of living within our means, for the first or second time Charlotte has ever done that since I have been there, and I have been there twenty-six years. Through this board of commissioners, and through the works of Uncle Sam in the sanitary line, we were able there when cerebrospinal meningitis came to our doors, at a meeting of our board one night it was declared that on tomorrow night or the next night a complete quarantine shall go into effect in this town, and General Dickman came forward, as the man that he is, and declared that no soldier should go into the town of Charlotte, and we declared none of our people should go into the camp until every case of cerebrospinal meningitis was wiped off the earth as far as we are concerned. Spinal meningitis was wiped out. We had two or three deaths; we had seventy-eight cases. That, in my opinion, could not have happened without the commission form of government. That is what has been done and that is what is being done.

Our whole-time man would have been here today; he promised me to come, but he has got work of importance in Charlotte. He is busy from early morning till late at night. Whenever you want him for anything he is on hand. We have a cleaner and a better time in Charlotte since it was first created. I noticed in the paper a few days ago where he expected to put in force over 350 sanitary closets the next week. The medical profession has stood behind Dr. Hudson almost to a man, but

we have got it where the law is going to act. He said, "When I get this law I will see that you do it." He has got the backbone; he has got the law.

I want to say to this man from Harnett, we have tried it in our county, and I know how it is done. If you want to get things done through your commissioners get your Superior Court judge to tell him the devilment in your county; tell him what you want done, and he will call the grand jury and will call up the county commissioners and tell them to do what he says. When the Superior Court judge tells them to do things they have never failed to do it. There are more ways to kill a dog than talking him to death. You can do things. It can be done. If the gentlemen will do it, it can be done. I know what I am talking about. I am a pretty slick medical politician, and it is through politics that you can do things. As Mr. Simmons in the United States Senate does it, so can we do it down here. I do not mean dirty politics.

Dr. J. W. Halford, Lillington: With regard to what the gentleman from Mecklenburg said about the *man* from Harnett, I would like to say I have no idea what he is able to do with the courts and people of his county. I have heard him say on one occasion, when addressing this Association, that if he wished to kill a man he would be sure to invite his intended victim to Mecklenburg County to perform the deed. I have never tried ice cream and cake on our judges, but have tried even more persuasive condiments. I have had my friends go up and recommend the sale of the county home, and then found that the order was not executed. I want to say that the people of Harnett County are a law unto themselves.

Dr. I. W. Faison: I know Harnett County, and they are just as mean as you charge them, but if the judge of the Superior Court orders the county commissioners—if the judge of the Superior Court demands it, they do it. If you get Judge Long interested, and tell him you want that done, Judge Long is going to do it. There are other judges in this State who will not. It is a pity some of them are elected.

MITCHELL COUNTY HEALTH DEPARTMENT

C. E. Smith, M.D., Toecane

For the past twelve months we have had fifteen cases of typhoid fever and two deaths. We have had an epidemic in the last ninety days of measles in the schools, also whooping-cough. Since the new quarantine regulations went into effect we have had two families in the county

with smallpox, and every year I imagine before we have had from 100 to 200 cases. I used to think there wasn't much to the German measles, but since the war has come I don't like anything German. I had the German measles about three weeks ago, and I got into such a mental condition I said to my wife, "A man has to get mighty bad off if he don't care if he gets well."

Dr. G. M. Cooper: We will now hear from Montgomery. I wish to say that for fear somebody will think Dr. Daligny is a German, he is an orthodox Frenchman, a graduate of the French Military Medical School, and what is more to the point, he served as a soldier in the French legions through the Franco-Prussian war, and he thinks that putting out of commission a whole lot of healthy Germans was doing the best piece of health work he has ever done.

Dr. Daligny asks me to read his report. I cannot hear him, and he cannot understand me.

MONTGOMERY COUNTY HEALTH DEPARTMENT

Charles Daligny, M.D., Troy

Sanitation.—The efforts to improve the general sanitation of Montgomery County during the year 1917 have been well rewarded. The vital statistics for the county show that there were 494 births and 155 deaths. Only one death from typhoid fever occurred; 23 from pneumonia, but two-thirds of them followed attacks of measles. Twenty-one took place at birth; two-thirds of these occurred in cases attended by midwives. Ten were due to measles, ten to tuberculosis, and eleven to colitis. This shows plainly that death from diseases due to bad sanitation were few, as there was only one death from typhoid fever and ten from colitis. The people of the county have become aware of the fact that the fly will cause diseases, and is a source of great danger, and to ward against it have screened their doors and windows. Having no sewer system in the county, it is an evident proof of the good results obtained by the installment of aseptic tanks and sanitary privies. There are about one hundred aseptic tanks in the towns of Troy and Mt. Gilead.

The soil of the county being of a sandy-loam formation, prevents to a great extent water stagnation, and therefore is a great facor in the maintenance of the public health. Malaria is practically unknown among our people. In fact people who move with us from a malarial district soon are free from chills, and recuperate rapidly in our climate.

Quarantine.—I am glad to be able to say that my quarantine work has been very much more pleasant and efficacious during the year 1917 than in the previous years. The realizing by the people that the intention of the law is not to impose a burden upon them, but to protect them against contagious and infectious diseases, they have reported diseases in their household with great diligence and shown a great interest in the reporting of their negligent neighbors. The deaths from contagious and infectious diseases have been few: ten from tuberculosis, ten from measles, one from typhoid fever, and one from diphtheria.

School Inspection.—Unfortunately the severe weather of the past winter and an epidemic of measles over the county caused the closing of practically all rural schools and some high schools, which retarded the sending and return of the examination cards. I have been over all cards I have received, and made a list of the pupils who are to report for examination. It will be about a month before I can call these children for my examination, and the treatment of defective children will not take place before late spring.

Remarks.—I believe that to lessen the deaths at birth, some legislation regulating the practice of midwifery should be passed. I would like to know if the County Board of Health has the power to regulate the practice of midwifery within their county. I also believe that the teachers of public schools should be instructed in the examination of children.

Dr. D. C. Absher: Gentlemen, I want to remind you that Dr. McBrayer promised us a warm welcome and a cold bite. I also want to remind you that the hour is growing late, and I wish that we limit our remarks until we finish the reports, and I also want to make the suggestion that if the men who make these reports are not here they should not be read. If they do not think enough to come, I move that it be not read. If there is any objection, I would like to hear it. I mean those who are not ill or otherwise found it impossible to be present.

NASH COUNTY HEALTH DEPARTMENT

T. M. Jordan, M.D., Nashville

For thirty days I have been continuing the health work in Nash County. Nash has had a great deal of health work done. Nash is more fortunate than some of the other counties in that, not having any large towns, is typically rural, and is therefore not handicapped with city problems.

The county home of Nash is as pretty a place almost as this Sanatorium, clean large yard, trees whitewashed, good deep well water with cement and pump protection. The home is furnished with saniseps tanks.

As to the jail, we have discouraged the use of fumigation and disinfection in the jail and recommend soap and water and paint, consequently the jail is as free from institutional odor as this room, and I don't think anybody will be complaining about the odor of this room.

Since beginning the work we have busied ourselves with the schools. We have distributed some ten thousand pieces of literature bearing upon disease and its prevention. We have placarded the schoolhouses, the bulletin boards inside and out of the court-house with the placard carrying the new quarantine law in regard to householders reporting disease. We have written the doctors, the teachers and magistrates in the county personal letters in regard to the same, asking their coöperation in reporting disease. Two magistrates have already responded by reporting over their own signatures. The latter fact perhaps is of little value except that it shows that you can get coöperation.

As soon as school cards are assembled, I shall go to a number of points to meet the children for fuller examination of those reported by teachers with defects. Nash is fifty miles long, and this will be an accommodation to the parents who have to bring their children.

The town of Nashville is the county seat, and while it is without a full sewage accommodation, 95 per cent of the homes have either sewage disposal or sanitary privies, and we expect to soon put that up to 100 per cent. Nashville has but 217 homes, and is the largest town in the county, except half of Rocky Mount, which is in Nash. However, we do not have to trouble with Rocky Mount, since they have such a good looking health officer over there that Rocky Mount excuses us from having any trouble with Rocky Mount.

I believe that we have as strong support in our county board of health and county commissioners as any one need ask for. The county board of health has really been forward and progressive, passing last July a county ordinance forbidding the placing upon the soil of the county any human excrement. We are not yet attempting to enforce it, and I doubt the propriety of doing so yet. There is such a lack of intelligent disease prevention understanding among the great mass of rural people in that county that no drastic steps should be taken until we can do some more educational work in the county. However, we are not looking for any great trouble over the undertaking later on.

NORTHAMPTON COUNTY HEALTH DEPARTMENT

F. M. REGISTER, M.D., JACKSON

A health department was established in Northampton County August 1, 1917, and the mistakes we made equaled Heinz's 57 Varieties, but I am glad to say that we have been able to see these mistakes, and have found a remedy for quite a number of them. It is quite a change in one's program, after a quarter of a century of general practice trying to cure diseases, to take up the specialty of preventing diseases. However, upon the whole, creating a health department in a county, while it leaves much to be desired, opens up a most useful field of medicine, the possibilities of which cannot be measured, when conducted along active and progressive lines. In giving a tabulation of the things done in Northampton County, it is not given in a boastful way, but by request and as a matter of record, and forms a text for discussion, so that each health officer can see what is being done in each county, and can go home better prepared to do more effective work in the future:

AUGUST 1, 1917—APRIL 1, 1918

Number of public meetings held:	
Schools (attendance, 5,209)	63
Other (attendance, 3,866)	34
Number of letters sent out	2,321
Number of bulletins distributed	5,000
Number of newspaper articles	52
Number of sanitary toilets built	727
Number of specimens examined	1,940
Positive for hookworm	598
Number of treatments given for hookworm	605
Number of sanitary surveys made	3,351
Number of schools visited	105
Number of pupils examined	598
Number of pupils vaccinated against smallpox	726
Number of doses of typhoid vaccine given	15,004
Number of children having defects remedied	50
Number of examination cards of school children received	3,663
Number of school susceptibility reports received	64
Number of children examined for diphtheria	125
Number of carriers found	12
Number of visits to county home	25
Number of visits to jail	40
Number of times acted as coroner's physician	3
Number examined for insane asylum	5

Water installed in courthouse and jail.

Placarded and quarantined:

Diphtheria	33
Typhoid fever	10
Scarlet fever	3
Measles	18

Inaugurated a prize essay contest, subject: Sanitation in Home and School, a full report of which cannot be given at this time, but so far has resulted in—

41 schools improving their sanitary condition.
900 specimens examined for hookworm.
100 householders improving their sanitary condition.
200 children wrote essays on this subject.
3,000 survey blanks filled out by children.

At this time plans are being worked out for an Infant Hygiene Unit to be conducted during June, July, and August.

It would be unfair in completing this report not to give credit to those who have helped this department to do what it has done. We are especially indebted to Dr. B. E. Washburn, Miss K. L. McLeod, Dr. Mary R. Wetmore, Mr. J. P. Long, Miss Ethel Kelly, W. M. Wall, C. E. Nelson, Mrs. F. M. Register, and Sarah Randolph (Colored Supervisor).

NEW HANOVER COUNTY HEALTH DEPARTMENT

Charles E. Low, M.D., Wilmington

There is no detailed official report forthcoming from New Hanover County. Dr. Slocum has been acting health officer there since Dr. Nesbitt's resignation, and as he has furnished me with no data there is no formal report to make. I have not assumed my official duties there, but have been asked to come here from Spartanburg and get acquainted, which it has been a great pleasure to do.

All I can say in the nature of a report is that the city of Wilmington and New Hanover County give evidence from a casual examination of being a very excellently administered unit. Dr. Nesbitt has done a very remarkable work in that county, and as I confessed to the Board of Health, it is going to be no boy's job to follow up Dr. Nesbitt. Every schoolhouse in the county is said to be sanitated. Many of the rural dwellings have some sort of sanitary closet device. Surface closets are practically eliminated, I am told, and most of the premises in the city are sewer connected. I think there are not more than 800 in the city of Wilmington not connected. As to the school work, I am not closely

enough in touch with it to give any definite report. I do want to express my appreciation of what Dr. Nesbitt has done there and of the wonderful organization that he has built up. It is an ideal for other counties to follow. The fact that Wilmington and the county of New Hanover appropriated nearly $25,000, which is nearly sixty-five cents per capita tax, for public health work, is a very remarkable showing. You will find few counties or states or cities that you may choose for comparison showing as high a per capita tax. The work is organized under a superintendent of health, a full-time assistant, or county health officer, six sanitary inspectors, four nurses, a full-time plumbing inspector, a full-time veterinarian, who is also meat, milk and food inspector, and a full-time laboratory man.

Dr. L. B. McBrayer: I am mighty glad to have had you with us; wish you could stay longer; want to extend an invitation to come back whenever you will. I have been convinced for a great many years that the health officer is the important thing in health work.

We are going to bring in a dozen men and let them stand along the wall there and Dr. McCain and Dr. Sherrill will explain the reaction and the time since the tuberculin was applied.

NIGHT SESSION

Dr. D. C. Absher: The meeting will come to order and we will take up the program where we left off this afternoon.

I would like to call your attention to the fact that there are a number of reports, and it will be necessary to limit the reports from county health officers to five minutes. There are a number to report, after which there will be two or three papers. It will be necessary, therefore, for us to pay strict attention to the time limit.

Dr. G. M. Cooper: I think the very fact that Dr. Fearing is here is a tribute to his loyalty to this Association. It is 255 miles to Elizabeth City. I would like to pay the same tribute to Dr. McCracken and Dr. Gibbs.

PASQUOTANK COUNTY HEALTH DEPARTMENT

Zenas Fearing, M.D., Elizabeth City

My duties are those of the County Physician and Quarantine Officer. The duties of the Quarantine Officer embrace Elizabeth City as well as Pasquotank County, a population of practically about 18,000. I have to perform the usual routine work, such as looking after the various county

institutions, namely, the county home, convict camp and county jail. Monthly reports are made to the board of county commissioners. Last summer the typhoid campaign was conducted in this county, and in my judgment was the most successful step towards prevention of typhoid fever ever had been undertaken in our county. There has been only one death from typhoid in this county since last July. We have had just fourteen cases of typhoid fever since last July. I have the hearty coöperation of all the physicians in my county, both white and colored; also the school teachers. As to the medical inspection of school children, I visited practically all the schools, about forty in number, in both city and county, making addresses at each, but owing to the extreme weather during the winter months, I have not been able to have them examined for any defects.

PERSON COUNTY HEALTH DEPARTMENT

W. A. Bradsher, M.D., Roxboro

The general health of the county during the past year has been good, and little affected by epidemics.

We have had no campaign against any definite disease, though a very large per cent of our people have been induced to take antityphoid vaccine.

There has been splendid coöperation by the county physician, the County Quarantine Officer, the County Superintendent of Education and the teachers, both in making the quarantine law effective and disseminating information leading to better health conditions.

School inspection work was not done this year because we were neither financially nor otherwise prepared to do it effectively. We are planning, however, to get all inspection and immunity possible for our people at an early date.

PITT COUNTY HEALTH DEPARTMENT

B. E. Washburn, M.D., Raleigh

Pitt County is one of the ten counties coöperating with the State Board of Health, through the Bureau of County Health Work. It may be of interest to tell something of the county health work now being done by the State Board of Health. The Legislature of 1917 made an appropriation of $15,000 to aid in rural health work, the International

Board of Health also gave $15,000, and with this amount the Bureau of County Health Work was organized, and carries on its work. Through the medium of this Bureau the State Board of Health is able to coöperate with ten counties in the establishment of local health departments. Nine of the counties have already organized county health departments and are doing successful work.

The work of each county health department is to present the health problems of the county, together with the best means of solution, to the people in a definite and comprehensive manner, and by a plan designed to reach and educate each home. In order to accomplish this the work is limited to definite units of health problems rather than an attempt to cover the entire field of county health activity. Each department is organized on a three-year basis and provides for a full-time health officer with traveling expenses, a clerical assistant, field assistants, adequate fixtures and supplies, a contingent fund, and funds for the following units of work: Soil Pollution, Quarantine, School Inspection, Life Extension, and Infant Hygiene. It is also planned to add units of work for Tuberculosis and Malaria. The counties at present coöperating under this department are Davidson, Forsyth, Lenoir, Nash, Northampton, Pitt, Robeson, Rowan, and Wilson.

The work in Pitt County began the first of January. We have had health officers from the International Board who began the work. Dr. C. P. Fryer, from Florida, has been appointed health officer and reached Pitt on the 10th of April.

The main work in Pitt thus far has been the school and the quarantine work. The schools in two townships have been visited, the teachers having filled out the cards before the schools were visited and the children examined. About fifty-five per cent of those found defective have been treated. Pitt is one of the counties which has had a whole-time health officer for a number of years, and the people were already educated, which probably accounts for the good coöperation in this unit.

ROBESON COUNTY HEALTH DEPARTMENT

Wilbur A. McPhaul, M.D., Lumberton

Robeson County was one of the last counties to be added to the list of counties that are going to do this special work that Dr. Washburn just explained to you. We organized a Health Department in Robeson County the first of December, therefore we have only been at this work four and a half months. The Life Extension Unit of health work was the first to be taken up in Robeson County, and it proved to be the means of killing what little opposition there was in the county against

the establishment of a Health Department. The good that a health officer does is never known to any one except those who are connected in some way in health work, or those who make a study of health problems, these being very few in rural communities. The great amount of work done by a health officer is unseen and unknown. That is why there is always opposition to health work, and the best way to overcome all this opposition is to begin with the Life Extension Unit. The people are getting something; they come for the examination; you examine them carefully—blood pressure test, urine test, and in fact a thorough physical examination. Perhaps they have never had a thorough examination before, for it is a fact that doctors in rural communities do not make thorough examinations until the patient is sick in bed.

You all know the kind of weather we had during December and January. The weather handicapped us somewhat, but we made a canvass of the county, giving lectures among the school children, sending out literature, and with newspaper publicity we were able to get about 500 applications for this free examination of adults between the ages of twenty and sixty-five years.

Number of public meetings held:	
Schools (attendance, 2,839)	38
Others (attendance, 400)	3
Number of letters sent out	1,023
Newspaper articles	70
Literature distributed	9,998
Diseases quarantined (including 26 cases of smallpox)	114
Number of examination cards of school children received	8,817
Number of children examined	161
Number of children treated	14
Number of applications received (Life Extension Unit)	895
Number of physical examinations made	561
Number vaccinated against smallpox	427
Number vaccinated against typhoid fever	30
Number visits made to county jail	25
Number visits made to county home	8
Number visits made to county convict camp	7
Number of examinations made for commitment to State Hospital for Insane	6
Several children examined under Child Labor Law.	
Number of paupers given free treatment	40

The County Board of Health has passed an ordinance requiring a sanitary privy to be built at each rural home under the supervision of the County Health Officer or his assistant before the first day of January, 1919, also an ordinance requiring every midwife in the county to register with the County Health Officer and receive instructions from him before they can practice midwifery.

ROWAN COUNTY HEALTH DEPARTMENT

A. J. Warren, M.D., Salisbury

Some time ago I received a letter from the Secretary of this Association requesting that I confine my report to 500 words. I have tried to do this. Therefore I have not included the regular routine work and the quarantine work in this report. I refer merely to the most important work that has been done.

The whole-time health work in Rowan County was begun the first of January, 1918. Up to this time no public health work had ever been undertaken in the county or the towns of the county, which number eleven, the largest being Salisbury, with a population of seventeen thousand. The population of the county is 40,150, with about 8,000 negroes. The county contains about 450 square miles, and is divided into fourteen townships. The rural communities are above the average and the tenant class is in the minority.

The first unit of work undertaken in the county was the medical inspection of school children. This work was inaugurated on the 12th of January by calling all the teachers of the county together, both city and rural, for the purpose of discussing the method of medical inspection of the children by the teacher. At this meeting a small boy was secured and a practical demonstration of the inspection by the teacher was gone through with. Cards and pencils were distributed to every teacher, and she was required to record the results of the inspection of the pupil after she had first seen it done. At this meeting the examination cards, eye charts and the bulletin of directions were distributed to about one-half of the schools of the county. To the other half the cards were sent by mail the following week.

On March 31st 5,317 cards had been returned, accepted and assorted. After they are assorted into the two classes, probably defective, and apparently normal, I find about fifty per cent in each class. On March 31st I had examined 1,048, 559 of whom were found to be defective. On March 31st 96 had been treated for defects exclusive of defective teeth, or seventeen per cent of the defectives have been remedied. All the defects remedied have been of the eyes, ears, nose and throat. The errors of refraction heads the list, with adenoids second. The majority of the defectives treated have been children from the rural communities.

I realize that this report is far short of what it should be and will be, but the response of the parents has been encouraging.

SAMPSON COUNTY HEALTH DEPARTMENT

E. T. Hollingsworth, M.D., Clinton

During the year I inspected 40 schoolhouses prior to the opening of the school. I visited 51 schools while in session. I examined 823 school children, of which number 300 were found defective. Treatment has been administered to 150 of them that were found defective. I have written 37 public health letters to public school teachers. I have notified 16 schools of the appearance of contagious diseases in the school community; have supplied school teachers with 200 pamphlets to be distributed among patrons of the schools. During the year the following contagious diseases have been reported and quarantined by me; 1 case of cerebrospinal meningitis; 2 cases of infantile paralysis; 4 cases of smallpox; 4 cases of typhoid fever; 20 cases of diphtheria; 18 cases of scarlet fever; 15 cases of whooping-cough; 89 cases of measles.

I have written 200 public health letters to citizens of the county; 20 articles to the county papers; have made 64 visits to see those who were afflicted with contagious diseases; have made 92 visits to the county home; 56 visits to the convict camp; 62 visits to the jail; 48 visits to the outside poor; have conducted four better babies contests; have had under my care and treatment one case of smallpox and four cases of pellagra. The latter disease appears to be on the decline. I have only one new case at this time.

I gave 36 inoculations against colds; vaccinated 947 people against smallpox; vaccinated 5,125 against typhoid fever; fumigated 21 houses; examined 9 insane persons for commitment to the State Hospital; gave 74 hookworm treatments; made 48 microscopical examinations; made 75 public health talks to at least ten thousand people; made 4 visits to investigate public nuisances and secured the abatement of same; distributed 600 pamphlets of public health literature to citizens of the county; mailed 8 specimens of water for analysis and organized 24 health clubs in the rural schools.

I have traveled 8,500 miles over the country roads; served for six weeks as a member of the local exemption board, and have been the examining physician for the local exemption board, and have examined 1,100 men for the Army.

TRANSYLVANIA COUNTY HEALTH DEPARTMENT

Dr. Cooper: I will say for Transylvania County that their commissioners have already made an appropriation for free dental work for school children. The dentist is at work. That is the first example in the State. I had a letter from Dr. Hunt, *in lieu* of a formal report, stating this fact. Dr. Hunt is an elderly man, but is a very progressive and capable health officer.

UNION COUNTY HEALTH DEPARTMENT

S. A. Stevens, M.D., Monroe

I have visited at the county home, the convict camp, and have done the routine work of the ordinary county physician. I am not a whole-time health officer. In regard to the quarantine work, I have had very little trouble except in getting reports of diseases. I have had very little trouble in quarantining, and in my efforts to carry out the quarantine law I have tried to impress upon the people generally the fact that it is their duty and that the law requires them to report a disease, whether they have a doctor or not. I have stressed this fact more than perhaps anything else. More cases have been reported by householders than by doctors. I made one or two talks to the doctors' meetings and did all I could to enlist the coöperation of the teachers. I encouraged them to report the cases and in many cases they have done so. As far as the diseases requiring quarantine are concerned, we have had measles and whooping-cough. We have had cerebrospinal meningitis. I wish the State Board could get up some way to assist the Health Officer in making diagnosis and carrying out the treatment of these cases. I wish there was some way by which we could receive the proper help and at the proper time.

As regards the teachers, I have received susceptibility sheets from the majority of them, and as to the method of reaching teachers it seems to me in addition to the plan provided by the present quarantine law at the meeting in the fall it is a good idea to make a talk to the teachers instead of waiting until the disease occurs to distribute the laws and regulations with regard to the various diseases, to give them these regulations at the time you hand out the susceptibility sheets, so they may know what to do without waiting four or five days sometimes to consult the quarantine officer and know what to do. In this way they would have a chance to learn the law in time to stop the disease without waiting for the necessary literature to be mailed to them.

WAYNE COUNTY HEALTH DEPARTMENT

W. H. Smith, M.D., Goldsboro

Aside from the routine work, all I have done in Wayne is to try to get the doctors and the school teachers to understand the new quarantine law and to report it. We have had a little difficulty to get the doctors to report. We have had to indict several. I did not indict any myself, but I got Dr. Crouch to indict them. I think now everything will run smoothly. We made an effort with Dr. Rankin's help to get Wayne County in those ten counties to work along the lines of the International Health Work, but the county commissioners did not see fit to put it on this year. The sentiment is lacking. I think in another year we will have the plan endorsed by the State Board of Health or we will have a full-time health officer.

WILSON COUNTY AND CITY HEALTH DEPARTMENT

L. J. Smith, M.D., Wilson

The Personnel consists of—

1. Health Officer.

2. Office Nurse, whose duties are to keep office records, vaccinate against smallpox and typhoid fever, and assist in all laboratory work.

3. Visiting Nurse.—The visiting nurse is employed by this department through the Metropolitan Life Insurance Company, and the salary is supplemented by funds from the city. Her duties are to visit the sick and instruct the people she comes in contact with in the sanitation and hygiene of the home.

4. City Sanitary Inspector.—The city furnishes funds for the employment of a City Sanitary Inspector, whose duties are to inspect and have installed sewer connections and sanitary can-type closets. He also inspects hotels, cafes, markets and groceries.

5. Rural Sanitary Inspector.—One field worker or Rural Sanitary Inspector is employed, whose duties are to do the follow-up work after the intensive soil pollution campaign.

6. Offices and Office Equipment.—The offices are situated in the City Hall, and consist of the executive office, where all clerical work is done. In connection with this we have a large laboratory and the necessary equipment for chemical and microscopic examination of milk, urine, sputum, blood and feces. Our laboratory is not in full working order,

due to the delay in getting supplies and the apparatus installed. However, we have been doing fecal examination and milk analysis.

The intensive soil pollution campaign has already been conducted by Dr. B. E. Washburn and his assistants.

The results of this campaign are twofold: It has laid the foundation for further public health work of all kinds by creating a sentiment in favor of health work. It has materially reduced the incidence of hookworm disease as is evidenced by the low per cent of positive findings in school children recently examined.

7. Quarantine Unit.—The Quarantine Unit has been carried out with a comparative degree of success. The physicians and laity are obeying the quarantine laws in direct proportion to the amount of knowledge they receive of the nature and purpose of the laws. I find placards, newspaper articles and personal talks are doing much toward the enforcement of the law.

The following diseases have been reported and quarantined since January 1, 1918:

Typhoid fever	3
Whooping-cough	61
Smallpox	4
Measles	17
Diphtheria	6
Cerebrospinal meningitis	1

8. School Inspection Unit.—This unit is now in progress, and we hope to finish before the schools close. Following is a report of the work done:

Total number of white schools in county	51
Total number of white school cards in	51
Total number of colored schools in county	34
Total number of colored school cards in	20
Total number of colored school cards not in	14
Total number of cards sent in (white and colored)	5,842
Total number of children receiving special examination	740
Total number of children found defective (per cent)	80
Total number of children receiving treatment	10

We have made a record of those who we believe will get the treatment recommended, and have made an estimate that at least seventy-five per cent will be treated.

9. Vaccination.—Along with the school inspection we have been vaccinating against smallpox.

Total number vaccinated against smallpox	2,218
Total number vaccinated against typhoid fever	4,000

In certain sections of our county we find very strong sentiment against smallpox vaccination, but we are overcoming this in a measure, first, by persuasion, and then by law. We have been materially assisted in this work by our Superintendent of Schools, Mr. Charles L. Coon.

10. Life Extension Unit.—The Life Extension Unit has not been put on yet, but we expect to start this some time in the near future, and from present indications it will be a success.

YADKIN COUNTY HEALTH DEPARTMENT

V. F. Couch, M.D., Yadkinville

With regard to work done as County Physician and Quarantine Officer, after hearing the reports from the counties having whole-time health officers, it makes us feel that we are not doing anything.

We have at the county home eighteen inmates, four males and fourteen females, and of these two are colored. I have visited this institution fifty-four times during the past year. The commissioners are contemplating a new building, changing its site. Have examined seven prisoners and made three commitments. Quarantine work is rather effective in Yadkin County, made so chiefly by the aid of the State, furnishing literature to teachers, householders, etc., which has aroused them to a spirit of help. It has consisted mostly of measles, 51 cases having been quarantined since July 31, 1917. Other cases of communicable diseases quarantined are: scarlet fever, 1; diphtheria, 3; cerebrospinal meningitis, 1; typhoid fever, 4. While there are probably a few cases of typhoid fever which have not been reported, the number of cases actually occurring in the county has been small owing to inoculation against this malady by the physicians. In the western portion of the county another physician and myself have inoculated more than fifty per cent of its population at a minimum fee of fifty cents per complete inoculation, this small fee being made possible by free vaccine furnished us by the State Laboratory of Hygiene.

YANCEY COUNTY HEALTH DEPARTMENT

J. B. Gibbs, M.D., Burnsville

Believing that you would be tired of the reports by the time you got to Yancey, I have decided to confine my paper to tuberculosis.

The work done in this county has consisted mainly of a general effort to learn just how much tuberculosis we had, how best to impress the

people with a sense of its danger, and how best to aid in getting it reported, prevented and cured.

As to the amount we have, I will say that the examination of the registrants reveals the fact that about eight per cent are tuberculous. We have about fourteen thousand population. Then if the disease prevails alike in all ages, and in both sexes, we would have about eleven hundred cases. There are very few negroes in this county. The vital statistics reports, which are both incorrect and incomplete, show fourteen deaths from tuberculosis in 1917.

As to the results of our educational efforts, I will say that our county commissioners have decided to employ an all-time health officer, and I believe the people will approve of their decision, and coöperate in the movement. Our idea is to get all the cases reported from the remotest mountain cabins and negro huts, where most of it is, to the health officer, and by him to the Bureau of Tuberculosis.

This, it seems to me, is the only way to accomplish much in a mountain county, where there are only ten physicians, and some of these not capable of making an early diagnosis. Fifty per cent of our cases are never seen by a physician.

Dr. G. M. Cooper: We will now call the city health officers. There are just a few of these present.

Dr. Stancill, City Physician of Raleigh, had about a dozen personal invitations from several of us, but he is not here. Dr. Hudson, Health Officer of Charlotte, told me about two weeks ago he would be here without fail, but I understand that, owing to a slight illness, it was impossible for him to come.

ROCKY MOUNT HEALTH DEPARTMENT

H. L. Large, M.D., Rocky Mount

Rocky Mount has a population of about 15,000. It occupies a rather peculiar position, in that it is situated on the line between Nash and Edgecombe counties, about one-half of its inhabitants being in each county. The Health Department consists of the chief health officer, known as the Superintendent of Health; one sanitary inspector, who has full police authority; two district nurses; one school and tuberculosis nurse; an office assistant, and four laborers. The department maintains a very completely equipped laboratory; and our routine work is pretty much of the same character as that just outlined by the gentleman from Winston-Salem.

In addition to the regular routine, I want to mention particularly two classes of work which we have taken up this year, viz.: Anti-tuberculosis and baby welfare.

We have been very carefully investigating the tuberculosis situation as it exists in Rocky Mount, and the results of our investigation thus far have convinced us that the question of controlling it resolves itself into a very complex one, presenting both social and economic problems. Of our 15,000 population about one-third are negroes, and the tuberculosis rate is very much higher in this race than in the white. Furthermore, the average negro is very much less intelligent than the average white, so that educational measures are not worth as much with negroes as with whites. In both races tuberculosis occurs more frequently in the poorer families, and a combination of ignorance and poverty makes a very hard problem to deal with in any practical way. We have concluded, however, that the nearest solution—and I don't know just how much of a solution this is going to be—is to establish a dispensary for examination, treatment and instruction. Here we can render such treatment and instruction as is necessary to the patient, and keep an eye on his progress; but what is probably more important, we can, by offering the opportunity for examination to those living in tuberculous environments, detect cases of early infection, thus being able, if circumstances will permit, to get them treated before it is too late. We have been doing some work of this kind, but expect to have it better organized, and the dispensary under the care of two physicians in the near future. In addition to this, we have one nurse who devotes a large portion of her time to nursing and instructing tuberculous patients and their families in their homes.

Baby welfare is another phase of work which we believe to be very important, particularly at this time.

In the future we hope to be able to establish a dispensary in connection with this work. At present we are confining ourselves to having the babies visited in their homes by the district nurses; and just here I want to say that we are having everybody's baby visited, and not simply those of the lower classes. We believe that the municipality, the State and the Nation owe it to every individual baby to see that it has the best opportunities and the best conditions under which to live and develop.

Our plan is to have every baby visited at least every two weeks. The confidence and coöperation of the mother is gained, and the nurse keeps an accurate record of the baby's weight, his condition, how he is progressing; how he is being fed, that is, whether artificial or breast, and if artificial, what food is being used, and such additional notes made as are necessary. This record gives us a line on not only the progress the

individual baby is making, but we can compare his progress with the others. Furthermore, these records are always open for the information of the family physician. The mother, as the nurse gains her confidence, is given such instruction in the care of her baby as the nurse thinks is necessary. It is our intention to keep the baby under this supervision until it is at least two years of age.

Our school work for the year has progressed fairly satisfactorily. We have not, however, found the teacher's physical examination to be of very much practical value to us. We have one nurse who devotes about half of her time to school work, and we have further been very fortunate in securing the help of a competent eye, ear, nose and throat specialist in examining school children, so that we no longer rely on the teacher's examination.

Dr. D. C. Absher: I am glad to see that a number of the State Medical Society men have come. I am glad to see Dr. Kibler, of the International Health Board, just home from South America. We hope all of you gentlemen, whether I have called the names or not, will feel free to take part in the discussions tonight.

We have two or three more papers, and it will probably not be best to discuss these reports inasmuch as we will be pushed for time. Nevertheless, if any one cares to discuss these reports we will give you just a minute to do so.

Dr. K. E. Miller: Before closing this session there is an idea which has occurred to me, and which I want to put before the Health Officers Association. If it amounts to anything, it will be a wonderful help to the county health officer.

I think we have all blindly accepted the theory that we must give three doses of typhoid vaccine at regular stated intervals, and in stated doses in order to make a success of it. I believe there is a little element of doubt about that. My reason for saying so has been suggested to me by some recent work of Dr. McCoy, of the Hygienic Laboratory in Washington, in the standardization of typhoid vaccine. He found that the degree of immunity depended very little upon the amount of vaccine. That is, a small dose produced about the same amount of immune bodies as a large dose. If this be true, it is very suggestive. If it should prove out that we can get satisfactory results by one dose instead of three, it will certainly simplify the work of a county health officer beyond measure. I do not know a thing about whether this is possible or not, but from the laboratory studies referred to above the problem is very inviting, and I would like to see somebody bold enough to try it out on a practical experimental basis some time. No doubt some of you are

more prepared to talk about it than I am, particularly Major Kinyoun, and I suggest he give us some light on that subject.

Maj. J. J. Kinyoun, M. R. C., Raleigh: In answer to the question put by Dr. Miller concerning the administration of one dose of anti-typhoid vaccine, I would say that so far this has not been a success. It was tried out on a rather comprehensive scale in Japan just prior to the Japanese-Russian war. The Japanese authorities reported that this one injection did not protect in all cases. I am also informed that the same was tried in France with about the same results.

While it is true that the agglutins did appear after the one injection, it does not appear to have the same immunizing power as when three injections are given.

Col. Eugene Whitmore, of the Army Medical School, has been conducting a series of experiments with what is known as "lipo-vaccine." The experiments so far give great promise; that is to say, that one injection of the typhoid bacilli suspended in oil appears to give the same immunizing properties as when three doses of the anti-typhoid vaccine are given. The French Army Medical Service has been using this system for some time past with splendid results.

On account of the possibility of having para-typhoid infection complicating that of typhoid, it has been deemed necessary by the War Department to inoculate against para-typhoid as well as typhoid. The vaccine now used is known as the triple vaccine; that is to say, it contains the typhoid bacilli and two strains of the para-typhoid—A and B respectively.

We experience quite a difficulty in dealing with the rural populations, and particularly so with the mixed populations, when we attempt to immunize these against typhoid fever. Here the three injections are disadvantageous, because many of the people will take the first injection who, on account of the local reaction or other causes, will fail to take the complete course of treatment and, therefore, the community is not protected. If the experiments of Colonel Whitmore succeed, and it is possible to use the lipo-vaccine in one injection instead of the three which are now necessary, it will be one of the greatest steps in the right direction in eliminating typhoid and para-typhoid from rural communities.

Dr. D. C. Absher: There were some matters brought out in the reports of the county health officers this afternoon that should have been answered by somebody. For fear it will take up too much time, I will not call on anybody to discuss anything further. We will proceed with the program. We would like to hear from Dr. George W. Shipp.

Dr. G. M. Cooper: As stated this afternoon, Dr. Shipp is in the Johns Hopkins Hospital and he cannot come. This is the first meeting that Dr. Shipp has ever failed to attend since the Health Officers Association was organized eight years ago.

Maj. Joseph Howell Way: Dr. Cooper, with your permission, I would like to have about one minute to bring a matter before this Association. Several times during the day today kindly reference has been made to that most splendid gentleman and leader of sanitation, Dr. R. H. Lewis, of Raleigh. I learned this afternoon that his continued indifferent health will prevent his being with us at this session. I move that the President of this Association be and is instructed to advise Dr. Lewis of our regret at his being unable to be with us at this session, in the work of an organization that he has helped so much, and convey also our assurances of friendly regard and affection. I make that motion now in order that Dr. Lewis may see it in the morning's paper.

Motion seconded by Dr. Cheatham and Dr. Jordan.

Dr. Arch Cheatham, Durham: I also move that a similar motion be passed regarding Dr. Shipp.

Dr. D. C. Absher: I do not think we should vote by ayes and noes. I think we should make it unanimous by rising.

Motion as amended by Dr. Cheatham unanimously carried.

CONSERVATION THROUGH CARE FOR DEFECTIVE SCHOOL CHILDREN

With Special Reference to Facts Learned Through Examination of 2,000 Men for Draft Army

Z. M. Caviness, M.D., Raleigh

We are now in the throes of the mightiest conflict of carnage and bloodshed the world has ever seen. The cry has gone up in every land to its people to conserve not only their man-power, but all of their material resources. If this mighty conflict is won for democracy, it must be done by the economic conservation of our resources. When this mighty conflict shall have ended our economic life will undergo reconstruction. This will not only fall heavily upon this generation, but upon the rising generation as well. For this we need men and women

who are strong physically, intellectually and morally. And, therefore, I call to the people of North Carolina to give our school boys and girls every means and advantage that will tend to conserve their physical, intellectual and moral protection and growth.

1. This may be done by safeguarding our children against the invasion of the various contagious and infectious diseases that have swept our State, not only claiming many of our brightest children by death, but left hundreds and thousands maimed for life. This we can best do as citizens by observing the State Quarantine Law, which provides for the control and prevention of the contagious and infectious diseases. The effectiveness of this law does not depend upon the law itself, nor upon Dr. Crouch, as State Epidemiologist, but upon the ability of the county quarantine officer in enlisting, not only the doctors and the school teachers, but his entire constituents in the coöperation of promptly reporting any and all cases to the county quarantine officer that come under his or her observation or knowledge, and to see that such cases, when placarded obey the rule and regulations governing the same. When this is done we will have no more sweeping epidemics, cutting down the attendance of our schools, and thus causing the loss of thousands of dollars to the school fund in nonattendance, and last, but not least, the lives of many of our children by death, and many more crippled and maimed for life.

2. By providing for our children in the schools, as well as in the home, better means of sanitation by the construction, where running water is not accessible, of some type of sanitary closet. I believe that the lack of this convenience in our rural districts and rural homes, is due largely to the fact that our people have not been shown the great importance, as well as the bodily convenience and comfort. When this is done, it will be a means of controlling the various diseases of which the human body is now recognized to be carrier. And, again, we will have conserved our child life.

3. By the medical inspection of our school children. Here lies, it seems to me, our greatest field for conserving the physical and intellectual growth and development of our children. They should not only have every safeguard thrown around them as a means of protection against the inroads of any contagious or infectious disease, but should have removed or corrected any physical defect or abnormality that they may have acquired by heredity, or developed in their infancy or childhood up to the time they enter school because of the lack of proper care and attention. The physical defects which tend to retard the growth and development of the child and make of him or her a man or woman who is a dwarf, weakling or a cripple for life, greatly retards their intellectual development as well.

Governor Bickett has immortalized himself in the minds and hearts of the people of this great State, and will go down in history as the Governor who, upon the eve of his inauguration, spoke out boldly in behalf of the interest of the physical well being of the school boys and girls of today, who in a short space of time will have developed into manhood and womanhood and assume the burdens of leadership in our civic life. And as a result of this inaugural address, came forth the enactment of the law which provides for the medical inspection of all the school children of North Carolina.

With this law as a basis upon which to work and to build, and Dr. Cooper, as a leader and director, unfolding in that masterly way of his, and at the same time firing with enthusiasm and zeal the medical inspectors who have undertaken this work this year, have set in motion a mighty awakening and interest in the school boys and girls which has already swept our State from the coast to the western boundary. I am already convinced that it is only necessary to point out to the parents the physical defects and abnormalities that their children have either fallen heir to through heredity or acquired through improper care and attention in infancy and childhood, and show them the importance of having these corrected as far as possible in order that their children may not be retarded in their physical and intellectual growth and development. Many children in the past have repeated grades and been considered by the teachers and the parents as being indifferent and backward in their studies. In these upon examination we found some disability that was easily correctible that has produced this intellectual lethargy.

This work has awakened an interest in the children upon the part of the parents that never was, in many instances, even thought of. The child is the only priceless possession of its parents, and there is nothing that is within the bounds of reason that the parents will not provide if pointed out and shown the importance and the necessity of the same.

This is not only a work of mere physical examinations of the child's body, as well as his eyes, ears, nose and throat, but a mighty educational awakening. This, in its incipiency, is destined to grow in the near future to a point in interest on the part of the parent that it will not be necessary that this work be done by the medical inspectors of the schools, but before any child enters school its parents will see to it that that child has no physical defects nor abnormality correctible that would tend to retard its growth intellectually. Some may think that this is a fancy dream and a high ideal to attain, but when we as a people have caught the vision of the higher, nobler citizenship that would result from this, then will we be ready and willing to do sacrifice that will develop a race that is strong physically and intellectually. No community, state or

nation is mightier than its strong people. Our citizenship should be our first consideration, and this is being tried today as never before in the history of the world. The weak are being separated from the strong, the strong being sent forth to bear not only their burdens, but those who have been found to be physically deficient.

It has been my privilege to examine in the draft for the National Army since August 1, 1917, 2,000 men. Of this number 516 were disqualified because of physical disabilities that were directly traceable to preventable diseases or correctible physical defects or abnormalities in childhood. Without a single exception every man that was disqualified because of tuberculosis, organic heart disease, or had or complained of having had rheumatism, had either or both diseased tonsils or bad teeth.

This war has revealed to us in our economic life conditions that we never dreamed of. None have been revealed that have been more appalling and distressing than the weakness and frailty of our human race. The record of our various boards in the draft in the National Army throughout our country show that 25 to 50 per cent of their men were disqualified who were subject to draft between the ages of 21 and 31. This appalling condition should not exist. Every child born in this free land and country, has a right under the protection of his country, and God as well, to be given a fair chance for physical and intellectual growth and development, and may the day hasten when the citizenship is aroused to the point of interest that they will see to it that this chance be given.

Dr. Absher: Dr. Jordan says he has a little paper that he can read in two or three minutes, and has promised not to add anything further to it.

Dr. T. M. Jordan: Nothing except to say it submits the reason why we do not progress faster with health work.

LOOKING BACKWARD AND FORWARD IN DISEASE PREVENTION WORK

T. M. Jordan, M.D., Nashville

The Health Officers Association should be a place to call attention to some of the obstacles confronting us in the work in which we are engaged, and a discussion of ways and means of surmounting said obstacles by the members of the association will not only afford entertainment for the occasion, but should be profitable to ourselves and the general public as

well. Therefore, I am submitting to this Association what appears to my mind to be the greatest barrier to success in the prevention of controllable diseases that we have to deal with.

Do you ask me to "name my man," the obstacle? I shall not say obstacle; I will name it a condition of unbelief in disease prevention. Do you ask me who does not believe in disease prevention? My answer will paraphrase an answer to a question asked more than two thousand years ago—there is none that do believe, if a man's belief is measured by his actions. Men are not believers in disease prevention until they keep the commandments that will prevent disease. If we believed, we would act accordingly.

It is not necessary perhaps for me to explain, that I am not laying charges of unbelief upon my faithful colaborers, nor would I minimize the great efforts being put into action in the cause by the North Carolina Health Department; but rather, at this annual gathering, I am advising that we take stock of the activities in the past, and with renewed faith in ourselves, survey new fields, as yet improperly cultivated, if it may be said that they are cultivated at all.

If it be a fact that a condition of unbelief in disease prevention among the greater part of the population is the Gordian knot that we must cut, let us for a moment apply our microscope and look for the cause of that condition, that a proper diagnosis may be given and a correct prescription offered for that malady.

Unbelief as to a condition is due, almost always, to a lack of information in regard to facts bearing upon that condition. Accepting that as a true statement of the proposition before us, the question naturally arises why this lack of information upon such an important subject? Before I ask you to accept my dictum as a true statement of the condition, let me invite your attention for a moment to the source of information of the general public, the pulpit, the press and the course of study in our general educational system. I certainly would not indict the pulpit or press of derelictions, for both are of inestimable value in proportion to the light given them, but neither have had any decided advantage over that given the general public, and they are, therefore and thereby, handicapped. I would not indict our educational system, the workers in which I have been so intimately associated with for more than two years, and who like ourselves are making greater sacrifices to labor for the good of mankind, than any other set of public servants, but as a means to a conclusion, I shall present for your consideration some facts derived from a survey of our educational forces in North Carolina in support of the statement, that the condition of unbelief as to disease prevention among the general public is due to the lack of information upon that subject.

I herewith submit the result of a questionnaire to the presidents of the colleges and principals of the high schools in the State answering the inquiry, "What is required to be known by the candidates for graduation as to disease prevention, in the school over which you preside?" Eighty-five per cent said nothing was required, and those who said anything else than nothing had as well said nothing, since what they did say was no evidence that anything bearing upon the subject was required.

Of the one hundred county superintendents of the public schools asked the question, "What knowledge of disease prevention do you require of teachers in your county for certificates to teach in the public schools of the State?" Over sixty per cent said nothing is required, and those saying anything else are entitled to fellowship with the college presidents and high school principals, inasmuch as what they did say meant nothing.

A study of the questions for examination of applicants prepared by the State Board of Examiners and Institute Conductors, that huge infant of uncertain parentage of the Legislature of 1917, reveals that there has been little if any improvement in the *status quo* as to disease prevention, in the mind of educators, since the introduction of the twentieth century plan of X-Raying the qualifications of teachers, for there stand side by side the same Siamese Twins, Hygiene and Sanitation, as of the years before, "And quoth the Raven, nothing more." Yet teachers are expected to be masters of and to teach these, when the only training they get on either, in the summer schools and teachers institutes, when they are attempted to be taught at all, is in the A B C Primers, so to speak, and by men and women who themselves have had no training at all in practical disease prevention. Certainly we need throw no stones toward these people. They are trying, but we are wondering why they don't alter their plan. Why should not the practical as well as the theoretical side be presented? How can we expect any belief-producing knowledge disseminated by simply teaching hygiene and sanitation? We might as well expect a perfectly symmetrical granite column from an untrained man, a mallet, a chisel and a rock quarry or handsome gaiters from a novice with awl, hammer, leather and lasts.

Will a belief that will beget action ever be the result of such a farce? If I may paraphase and quote St. Paul to the Romans, I might ask, "How shall they obey laws they do not believe? And how shall they believe in them of which they have not heard? And how shall they hear without a teacher? And how shall the teachers teach unless they be taught? How shall they be taught unless some one be sent?"

I have disclaimed indictment of pulpit and press and of the two departments of government already mentioned, but I shall not promise

immunity to this Association if it shall not address itself to the task of correcting a lack of recognition of the science of practical disease prevention in our public educational system. To whom should those in charge of that department look, or expect help and correction from, except an association of men engaged in that kind of work? Nor do I believe I misjudge those in charge of the North Carolina State Health Department when I say that I think they would welcome suggestions as to the best means of disseminating the knowledge of disease prevention from those actively engaged in that work.

Dr. D. C. Absher: Since Dr. Shipp was not here to read his paper, we will have time, perhaps, to discuss some of those reports from county health officers at the same time that we discuss Dr. Caviness's paper.

You will pardon me. I have made a few notes as the reports were made. There were several men who were perplexed by mumps, chickenpox and scabies, about the placards, etc. As I understand it, the rules and regulations of the State Board of Health did not cover mumps, chickenpox and scabies, but if I am not mistaken the school board of every district has jurisdiction; they can exclude from the school any of those diseases. I merely mention that, and if I am wrong Dr. Rankin can correct me.

One health officer stated that he had vaccinated so many thousand people against typhoid fever. When he made that statement it led me to wonder just how many health officers really know exactly how many people they have vaccinated, how many health officers really keep records, put the name down of every man, woman and child who is vaccinated against smallpox or typhoid. "About" is a small word, yet if we do not keep records we can stretch our figures just as far as we desire; and we think we are telling the truth, and we may be far from it.

Another thing that struck me is that a number of health officers are still doing surgical work. I am not going to discuss that further than to say, or rather to wonder, just how much health work there is in surgery.

A number of men have mentioned German measles, a certain per cent of their measles were German measles. They did not know whether to quarantine at all. It strikes me German measles is a contagious disease, and that you very often have complications, pneumonia, and so forth, so that whether it is German measles, French measles, Italian or American measles, it should be quarantined. I do not see why any question should be raised. I am not attempting to correct anybody. I merely mentioned German measles because it struck me personally in that light.

Another health officer stated he had made a certain number of visits, or that he had made a number of visits to his county home, just how many he did not know. Well, I don't suppose he does. I would just like to suggest that if every health officer will keep a blotter, a little day book, and jot down every visit he makes to his county home, his jail, just how many men he vaccinated against typhoid, against smallpox during that day, he can sit down at the end of the year and tabulate exactly what he has done during the year. It is a very simple process, and each of you can do it if you just think of it.

If there is any further discussion of these reports we will be glad to have them. We also will be glad to have a discussion of Dr. Caviness's paper.

Dr. G. M. Cooper: I don't want to appear smart, and I don't want to have too much to say. What I want to say right now does not apply to any health officer here. If it did he would not be here. Regarding President Absher's reference to surgery, I think the first surgical operation that should be done for some health officers would be to amputate them from their jobs—the so-called health officers, who take no interest in health work, draw the salary, and will not let men be elected who will do something. I could see how every man brightened when you mentioned quarantine work, but I want to get you off that just a minute and get you back to Dr. Caviness's paper. Dr. Rankin handed me a copy of the New York *Times* of yesterday, in which you see the following headlines: "War's Emphasis on Health Education. Seventy-five Per Cent of School Children Have Defects. Twenty-three Million Enrolled in the United States for 1917. National Program for the Solution of the Problem." We have a program in North Carolina for the solution of this problem. We have attempted to put it into effect in thirty-two counties this year. Here are some figures compiled by the *American Medical Journal* several weeks ago comparing the defects of country children with city children. (Chart exhibited.) We have in North Carolina about eighty per cent rural population, and naturally eighty per cent of the children, or more, are in rural communities. Here is a part of the program, a State provision for the general health of the children, which should include the following: (1) Health examination and dental inspection at least once a year. (2) Follow up health work by school and district nurses, with coöperation of home and all available agencies for the treatment of defects, dental, surgical, or otherwise. I wish to state that Dr. Caviness has been able to get 600 children treated in Wake County from outside the city of Raleigh. Dr. Warren, who began the work in Rowan the first of January, has followed him a close

second. A great many others are doing the same. (3) A provision for correction of all defects, and for free medical, surgical, dental, and health clinics. We hope to have free dental clinics in not less than eight counties in North Carolina this summer. We are going to start on a moderate scale, but start we will. As I said, children handicapped by health defects cannot make the best use of the education which pretends to help prepare the children for life. Here in North Carolina, with eighty per cent of our population rural, records for teeth defects show a high percentage. Dr. Jones can tell you of some records he has for Guilford County which show one hundred per cent of children in one school with decayed teeth. We have some records for not less than ten counties, which show after grading most conservatively that the average school in North Carolina has at least seventy-five per cent of the children with teeth defects. Of children over twelve years old, at least fifty per cent have permanent teeth decayed, when the full development of the permanent teeth is supposed to be complete. A hygienic school management should insure conditions to the highest degree favorable and helpful. Before we get anywhere in North Carolina we are bound to interest the school teachers. It is the finest possible piece of strategy—do everything you can in and through the school. I speak from my own experience and observation.

Just a few days ago Mr. Booker and I were invited to go out some distance from the State Capital. I went to help the County Demonstration Agent in the organization of a civic league in coöperation with the Woman's Club of that town. The meeting was to be held in the school building. We found a $65,000 three-story building, in which they had 135, I think I was told, boarding and high school pupils, boarding in the town, and in the dormitories. Now, mind you, this handsome building, with all school equipments, had no sewerage. As we drove up to the front of the building we saw two houses just off to the side of the building, to the side of the front, houses looking terribly familiar in North Carolina. We found that these two buildings not only could be seen, but they could be smelled by the time the machine stopped and we got out. These were two open-back surface privies—one for the boys, and one for the girls—at what might be said the front of the school yard, with an old broken-down fence, about half-way between the two buildings. Neither had been cleaned out this year. We found in charge of that school a man who is a graduate of a reputable college in North Carolina. This man had promised, when the Woman's Club had invited us out there, to take his whole high school into this meeting. Mr. Booker went out with a lot of charts and valuable reports, prepared to make a good talk to these children. We waited a half hour until he got through

his classes, and then he stated to the school before dismissing, that any pupil who desired might attend the meeting. About a dozen little girls went up there because their mothers were there, were interested in the meeting, and made them do it. We started the meeting with about two dozen present. The head of the school came in about the time we got half through. He sat in one seat about two seconds, then another, raised two or three windows, let down two or three, and marched out. We haven't seen him since. Absolutely uninterested in the management, yet sitting there from day to day with toilet paper blowing all over his yard. As long as people put up with things like that the death rate in North Carolina from diseases like typhoid fever will continue disgracefully high.

I just want to say one thing in regard to the program that we have. Dr. Thomas D. Wood is planning a health program, which, in many respects, is exactly identical with our own. We have thirty-two counties in which we are beginning an inspection. We have records showing over 1,500 children have been treated in this State this year for physical defects, and I have hoped in the counties that we select this coming year that we could have a better record shown than we have this past year, and that is the announcement that I wish to make now, because the whole fundamental is based on work in the schoolroom, especially in the grades below the seventh grade, and if a paper like the New York *Times* can give a three column headline, we can go home and get the people in our State interested in this school problem. I want to leave that one thing with you, that the school work that is being undertaken is the most important part of it.

Dr. Absher: I am glad to see that Dr. Ferrell, of the International Health Board, has just come in. He needs no introduction to the gentlemen of this Association. I am sure we would all be glad to hear from Dr. Ferrell just at this time.

Dr. John A. Ferrell, New York: I thank you for the privilege of being present at your conference. I desire to express my appreciation for the work that has been done by you Health Officers of this Association. It occasions me much regret that I have been unable to attend the previous sessions of this meeting. To be present again with the Health Officers of North Carolina, and to learn of your recent accomplishments in constructive health measures gives me immense satisfaction. I congratulate you most incerely on the work you are doing.

WHAT YOU CAN OBTAIN FROM YOUR STATE LABORATORY

C. A. Shore, M.D., Raleigh

I thought it would be worth while to speak about the new work at the laboratory as well as to remind you of the old. These reminders are necessary, for we frequently find that the doctors are unaware of work which has been going on for years. To make my talk as concise as possible I have had leaflets prepared which give an enumeration of the laboratory work:

Free Laboratory Help in Diagnosis in diphtheria, tuberculosis, typhoid fever, paratyphoid fever, syphilis—Wasserman test. Gonorrhea—(a) Fixation test; (b) Examination of pus smears; rabies, intestinal parasites, meningitis (spinal fluid), malaria.

Free Water Analysis—Municipal and Domestic.

Free Vaccines: Typhoid vaccine, paratyphoid vaccine, triple vaccine (typhoid, paratyphoid A, and paratyphoid B), smallpox vaccine, pertussis vaccine.

At Cost of Package (25 cents): Diphtheria antitoxin, normal serum.

Treatment, Pasteur Antirabic—Free to the indigent, a fee of $20 to those able to pay.

Now in Preparation: Tetanus antitoxin, tuberculin.

The first division is the diagnostic work—bacteriological and serological. Such work is a necessity for the practitioner, and unless he has a private laboratory it must be done either in a municipal or State laboratory. Since the value of such work is in direct relationship to the quickness in which the report is given, we have always used our utmost efforts to get out reports promptly, but distances in our State are great and delays in mail, particularly of late, often occur. For this reason we believe that every city of 20,000 inhabitants should have its own diagnostic laboratory, which should be equipped also to do the milk work which cannot be advantageously handled by a central laboratory. There still would remain plenty of work from the small towns and the country districts for the State laboratory.

It is necessary constantly to emphasize the importance of a correct interpretation of reports. For instance, there are many doctors and most laymen who believe that a negative report on a sputum examination means that the patient from whom the sputum came is free from tuberculosis. Of course it does not, although a positive report means that he

certainly has the disease. On the other hand, the diphtheria bacilli may occasionally be found in a normal throat.

If such allowances must be made for bacterial reports, how much more are they necessary for Widal reports and Wassermann tests! Misinterpretations are not usually the fault of the laboratory man. He realizes that the correct attitude to his work is to consider it an aid to clinical diagnosis.

The Wassermann test and Gonorrheal Fixation test are the newest work in this division.

We probably make more water analyses than any other State laboratory in the country. Much has been accomplished in the improvement of municipal supplies and commercial bottled waters, but we think that most of our analyses of domestic supplies are of comparatively little value. The local health officer can make a better estimate of a private well by an inspection than a laboratory man can by a laborious bacterial analysis. The point to bear in mind is that the underground water, with few exceptions, is pure and that pollution occurs from the top; therefore if you have an open well into which surface water may run, or if the bucket and rope must be handled by every user of the well, you may be certain that the well contains bacteria of intestinal origin.

The first vaccine made by us was typhoid vaccine in 1913. We believed that if typhoid fever could be stamped out of the U. S. Army it could also be done in North Carolina if the same methods could be used. Of course we realized that inoculation could not be made compulsory, but we could at least help. The cost of the vaccine at that time was $1.50, which alone was enough to limit its use. The demand for our vaccine was immediate and we estimate now that at least one-sixth of our population has been immunized, and the result is apparent, for there is certainly much less typhoid fever than there was five years ago. We do not think that the use of typhoid vaccine is alone responsible, but we are sure that it has helped. The vaccine that we made was identical with that used in the army, and we followed them last year in making a triple vaccine composed of typhoid, paratyphoid A, and paratyphoid B. So far as our evidence goes there is very little paratyphoid fever in North Carolina, and it is not a fatal disease, so we believe it best to immunize against it only in cases of known exposure or in epidemics.

We first made smallpox vaccine by following Noguchi's method of injections of virus into the testicles of rabbits. It made a beautiful vaccine, but unfortunately was easily killed by unfavorable conditions. As soon as we were convinced of this we discontinued its distribution and waited until we moved into our new laboratory where we could have the use of stables and make a vaccine in the classical way on calves. It

is a particular pleasure to know that we have been putting out a very potent vaccine which has given general satisfaction.

Pertussis vaccine has been made during the past winter and distributed free. We realize that its true value has not yet been established, but the reports that have been returned to us have all been favorable. It is perhaps possible that unfavorable reports have been withheld.

The manufacture of diphtheria antitoxin is a much greater undertaking than the making of vaccines, but we have a good plant and now have diphtheria antitoxin of most excellent quality tubed in syringes and ready for distribution at 25 cents per syringe. Doctor Gordon tells me there were about 530 deaths from diphtheria in North Carolina last year, and I believe we can cut that down. The ideal way is free distribution, but our appropriation is not quite large enough for that, so it is necessary to charge for the cost of the syringe and package. The price of 25 cents is for each syringe, whether it contains 1,000, 3,000, 5,000 or 10,000 units. By next autumn I want to make arrangements with each County Health Officer to have at least one distributing station for diphtheria antitoxin in each county.

We have had an opportunity to put up normal horse serum at a nominal expense. We have hesitated to emphasize this product, as a mere mention of the uses to which it has been put sounds like a patent medicine advertisement. Will only say that it can be obtained from us for 25 cents per syringe, but that we are unable at present to make any recommendations, for or against its use.

The Pasteur antirabic treatment should not be necessary in any civilized State; nevertheless we have a great deal of rabies and it is on the increase. We would like to be able to send out the treatment and save ourselves from a laborious duty and the patients much expense, and perhaps some time we may evolve a satisfactory method. Meanwhile we should each of us remind our Legislators that there is one disease which they have the opportunity of abolishing by legislative enactment. An act providing for the confinement of all unmuzzled dogs would stamp out the disease in a very few years. We charge a fee of $20.00 for the treatment, but collect very little—averaging only $1.91 per patient when I last figured it up.

It would perhaps be better not to mention products not ready for distribution, for their preparation often takes longer than is expected. However, will say that we are now working on tetanus antitoxin and tuberculin, though we can make no announcement about them at present.

If the laboratory can help you it is your duty to make use of its services. The maintenance of the health of the civil population was never more vital than now.

Dr. Dan. E. Sevier, Asheville: With the permission of this Society I would like to offer a resolution placing this Society on record as extending a vote of thanks to Dr. and Mrs. L. B. McBrayer, Dr. and Mrs. P. P. McCain, of Sanatorium, also to the management of the Carolina Hotel of Pinehurst for the elegant manner in which we have been entertained. I think this is one of the most beautiful health resorts, not only in North Carolina, but in the world. I believe that I have attended the Medical Society meetings for the last twenty years, and I have attended the Health Officers Association since it was first organized, and I believe as a whole the Health Officers have been more royally entertained and better pleased than at any other meeting that I have had the pleasure of attending.

Motion seconded by Dr. Arch Cheatham; motion carried.

REPORT OF AUDITING COMMITTEE

The Auditing Committee has examined the records of the Secretary and Treasurer, and finds them to be correct and in order in every respect.

E. F. Long,
K. E. Miller,
J. R. McCracken,
Committee.

Motion that report of Auditing Committee be accepted; seconded; carried.

Dr. Absher: Election of officers is now in order. We will first take the office of President.

Dr. Dan. E. Sevier: I wish to place in nomination a man who needs no introduction to this Association. He has been with the Association since it was organized. He is active in his work, and has the backbone to carry out the work, and I believe if selected as the President of this Society he will carry it on to success. I present to you for your consideration the name of Dr. J. R. McCracken, of Waynesville.

Dr. T. M. Jordan: I believe every word Dr. Sevier says, and consequently I second the motion.

Dr. B. E. Washburn: I move that it be made unanimous and the nominations closed.

Motion seconded; carried.

Dr. Absher: We will now elect a Vice President.

Dr. W. M. Jones, Greensboro: I would like to nominate for Vice President a man I do not have to say anything about—Dr. E. F. Long, of Davidson County.

Motion seconded by Dr. Bulla. Carried.

Maj. Joseph Howell Way and Dr. Dan. E. Sevier appointed to conduct the new President to the chair.

Maj. Joseph Howell Way: It is with a great deal of pleasure that I present to you your newly elected President for the ensuing term, Dr. J. R. McCracken. In addition to what has been said, I want to add a word of personal ecomium. He has been my friend and neighbor doctor ever since he came into the profession, and he is all right, both as man and physician. Could I say more?

Dr. J. R. McCracken: There was a nomination for Vice President, I believe.

Dr. W. M. Jones: Yes, it was made and seconded.

Dr. D. C. Absher: I move that the nominations be closed.

Motion seconded and Dr. E. F. Long is declared unanimously elected Vice President.

Dr. D. C. Absher: Dr. Cooper was elected last year Secretary for life, I am sure.

Dr. J. R. McCracken: The chair declares Dr. Cooper's term of office unexpired.

Dr. G. M. Cooper: I appreciate that honor, of course, and I am willing to work in the harness as long as I can, and I expect to attend the Health Officers Association of North Carolina as long as I live—as long as I am able to get here, but honestly I think it is well to go out on a high tide. At this, our eighth meeting, the North Carolina Health Officers Association, thanks to Dr. Hays and some others, is now an established organization. I am deaf, and, therefore, make a very poor secretary. I think it would be well to pick another man. There are men who have never missed a meeting, who can give as good service as I can. I think it would be better to nominate one of these men.

I wish to personally and officially thank every man who has appeared on the program today, many at great expense to himself, and who have helped to make the meeting a success.

Dr. J. R. McCracken: I think the life of any association depends more upon the secretary than anybody else. In Dr. Cooper we have a live wire, and we think his remarks are out of order.

I would not like to adjourn without expressing my pleasure at the honor conferred tonight. It is indeed a surprise. I think that with one exception I have attended every session of the North Carolina Health Officers Association. I consider it the honor of my life to be elected its presiding officer.

Dr. E. F. Long: This election to office was unexpected to me. I was just trying to secure recognition to nominate Dr. Jones when he nominated me. I feel that I am almost an intruder, having been a member of the North Carolina Health Officers Association for only three years. I assure you that the honor is sincerely appreciated, and I wish to thank you.

INDEX

PAGE

Absher, Dr. D. C.: Annual Address of President 4
Absher, Dr. D. C. 3, 11, 12, 19, 28, 34, 35, 36, 37, 38, 41, 66, 70, 83, 84, 87, 90, 93, 97, 98
Address, Annual, of President 4
Alamance County Health Department—*Dr. W. R. Goley* 38
Alleghany County Health Department—*Dr. Jos. L. Doughton* 39
Anderson, Dr. T. E.: Iredell County Health Department 59
Auditing Committee, Appointment of 12
Auditing Committee, Report of 97
Bradsher, Dr. W. A.: Person County Health Department 71
Bulla, Dr. A. C.: Forsyth County Health Department 51
Buncombe County Health Department—*Dr. Dan. E. Sevier* 39
Caldwell County Health Department—*Dr. L. H. Coffey* 41
Carlton, Dr. R. L.: Winston-Salem Department of Health 54
Caveness, Dr. Z. M.: Conservation Through Care for Defective School Children 84
Chatham County Health Department—*Dr. L. E. Farthing* 41
Cheatham, Dr. Arch.: County and City of Durham Health Department 48
Cheatham, Dr. Arch. 84
Chowan County Health Department—*Dr. J. W. Warren* 43
Coffey, Dr. L. H.: Caldwell County Health Department 41
Committees Appointed:
  Auditing 12
  Resolutions 12
Conservation Through Care for Defective School Children—*Dr. Z. M. Caveness* 84
Cooper, Dr. G. M. 11, 38, 58, 62, 70, 76, 80, 84, 91, 98
Couch, Dr. V. F.: Yadkin County Health Department 79
County and City of Durham Health Department—*Dr. Arch. Cheatham* 48
Daligny, Dr. Charles: Montgomery County Health Department 65
Dare County Health Department—Dr. Franklin P. Gates 44
Davidson County Health Department—*Dr. E. F. Long* 47
Development of County Health Work—*Dr. K. E. Miller*, U. S. P. H. Service 14
Development of County Health Work: Discussion by
  Dr. W. S. Rankin 19
  Dr. Benj. K. Hays 21
  Dr. Chas. E. Low 21
  Dr. K. E. Miller 23
Doughton, Dr. Jos. L.: Alleghany County Health Department 39
Edgecombe County Health Department—*Dr. K. E. Miller* 49
Faison, Dr. I. W. 36, 62, 64
Farthing, Dr. L. E.: Chatham County Health Department 41
Fearing, Dr. Zenas: Pasquotank County Health Department 70
Ferrell, Dr. John A. 93
Forsyth County Health Department—*Dr. A. C. Bulla* 51
Franklin County Health Department—*Dr. J. E. Malone* 51
Gates, Dr. Franklin P.: Dare County Health Department 44

PAGE
Gibbs, Dr. J. B.: Yancey County Health Department 79
Goley, Dr. W. R.: Alamance County Health Department 38
Guilford County Health Department—*Dr. W. M. Jones* 56
Halford, Dr. J. W.: Harnett County Health Department 57
Halford, Dr. J. W. 64
Harnett County Health Department—*Dr. J. W. Halford* 57
Hays, Dr. Benj. K.: Interesting the Public in Health 29
Hays, Dr. Benj. K. 21
Haywood County Health Department—*Dr. J. R. McCracken* 57
Hollingsworth, Dr. E. T.: Sampson County Health Department 75
Interesting the Public in Health: Discussion by
Dr. K. E. Miller 32
Dr. J. S. Mitchener 33
Dr. E. F. Long 33
Interesting the Public in Health—*Dr. Benj. K. Hays* 29
Invocation—*Dr. T. M. Jordan* 3
Iredell County Health Department—*Dr. T. E. Anderson* 59
Johnston County Health Department—*Dr. George D. Vick* 59
Jones, Dr. W. M.: Guilford County Health Department 56
Jones, Dr. W. M. 98
Jordan, Dr. T. M.: Invocation 3
Jordan, Dr. T. M.: Looking Backward and Forward in Disease Prevention Work 87
Jordan, Dr. T. M.: Nash County Health Department 66
Jordan, Dr. T. M. 28, 87, 97
Kinyoun, Major J. J. 34, 83
Large, Dr. H. L.: Rocky Mount Health Department 80
Large, Dr. H. L. 28
Lenoir County Health Department—*Dr. J. S. Mitchener* 59
Long, Dr. E. F.: Davidson County Health Department 47
Long, Dr. E. F. 33, 99
Looking Backward and Forward in Disease Prevention Work—*Dr. T. M. Jordan* 87
Low, Dr. Charles E.: New Hanover County Health Department 69
Low, Dr. Charles E. 21, 36
McBrayer, Dr. L. B. 37, 70
McCracken, Dr. J. R.: Haywood County Health Department 57
McCracken, Dr. J. R. 98, 99
McLaughlin, Dr. C. S.: Mecklenburg County Health Department 62
McPhaul, Dr. Wilbur A.: Robeson County Health Department 72
Malone, Dr. J. E.: Franklin County Health Department 51
Martin County Health Department—*Dr. William E. Warren* 61
Mecklenburg County Health Department—*Dr. C. S. McLaughlin* 62
Miller, Dr. K. E.: U. S. P. H. Service—Development of County Health Work 14
Miller, Dr. K. E.: Edgecombe County Health Department 49
Miller, Dr. K. E.: 13, 23, 32, 82
Mitchell County Health Department—*Dr. C. E. Smith* 64
Mitchener, Dr. J. S.: Lenoir County Health Department 59

PAGE
Mitchener, Dr. J. S. 33
Montgomery County Health Department—*Dr. Charles Daligny* 65
Nash County Health Department—*Dr. T. M. Jordan* 66
New Hanover County Health Department—*Dr. Charles E. Low* 69
Northampton County Health Department—*Dr. F. M. Register* 68
Pasquotank County Health Department—*Dr. Zenas Fearing* 70
Person County Health Department—*Dr. W. A. Bradsher* 71
Pitt County Health Department—*Dr. B. E. Washburn* 71
Public Health and the War—Annual Address by Dr. D. C. Absher, President North Carolina Health Officers Association 4
Quarantine—*Dr. S. A. Stevens* 25
Quarantine: Discussion by
Dr. T. M. Jordan 28
Dr. H. Lee Large 28
Rankin, Dr. W. S. 19, 27
Register, Dr. F. M.: Northampton County Health Department 68
Report of Auditing Committee 97
Report of Secretary-Treasurer—*Dr. G. M. Cooper* 12
Resolutions, Appointment of Committee on 12
Robeson County Health Department—*Dr. Wilbur A. McPhaul* 72
Rocky Mount Health Department—*Dr. H. L. Large* 80
Rowan County Health Department—*Dr. A. J. Warren* 74
Sampson County Health Department—*Dr. E. T. Hollingsworth* 75
Secretary-Treasurer, Report of 12
Sevier, Dr. Dan. E.: Buncombe County Health Department 39
Sevier, Dr. D. E. 40, 97
Shore, Dr. C. A.: What You Can Obtain From Your State Laboratory 94
Smith, Dr. C. E.: Mitchell County Health Department 64
Smith, Dr. L. J.: Wilson County and City Health Department 77
Smith, Dr. W. H.: Wayne County Health Department 77
Stevens, Dr. S. A.: Quarantine 25
Stevens, Dr. S. A.: Union County Health Department 76
Transylvania County Health Department 76
Union County Health Department—*Dr. S. A. Stevens* 76
Vick, Dr. George D.: Johnston County Health Department 59
Warren, Dr. A. J.: Rowan County Health Department 74
Warren, Dr. J. W.: Chowan County Health Department 43
Warren, William E.: Martin County Health Department 61
Washburn, Dr. B. E.: Pitt County Health Department 71
Washburn, Dr. B. E. 97
Way, Maj. Joseph Howell 35, 40, 84, 98
Wayne County Health Department—*Dr. W. H. Smith* 77
What You Can Obtain From Your State Laboratory—*Dr. C. A. Shore* 94
Wilson County and City Health Department—*Dr. L. J. Smith* 77
Winston-Salem Department of Health—*Dr. R. L. Carlton* 54
Yadkin County Health Department—*Dr. V. F. Couch* 79
Yancey County Health Department—*Dr. J. B. Gibbs* 79

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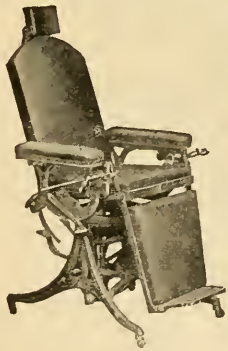

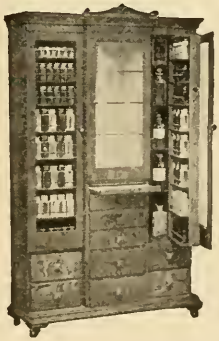

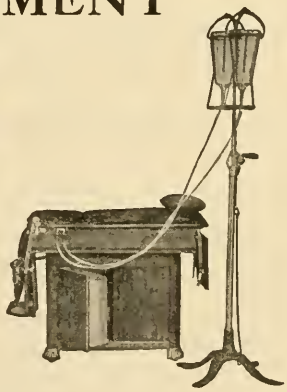

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